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ABSTRACT

The bilingual education programs of Connecticut are described. The 12 programs serviced 11,482 students in 1985-86; 93% of the program participants were dominant in Spanish. Seventy-one percent were in kindergarten through grade 5. Over 3,000 were new entrants to the program in that year. About 1 in 5 students in bilingual education were late entrants or left the program prematurely; most of these students were in the program less than 90 days, usually because their families moved out of the district. Local districts supplied most of the program costs; the state contributed 5.5%. About 10% of the students exited the bilingual program and entered all-English classrooms. The longer students continued in bilingual instruction, the more likely they were to exit to all-English instruction. In the lower grades, exiting students were more likely to perform at targeted levels than were high school students. The most important characteristic of these students is their extreme mobility. Several years in bilingual instruction may be needed before students catch up on English skills. Fifteen figures are included, and 69 tables providing data on Spanish and English reading and mathematics achievement are appended. (SLD)

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BILINGUAL EDUCATION PROGRAM EVALUATION REPORT - 1985-86

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Bilingual Education Program Evaluation Report - 1985-86

March 1987

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EXECUTIVE SUMMARY

1. Connecticut's twelve bilingual education programs served 11,482 students in 1985-86; 93% of the program participants were dominant in Spanish. Close to three-quarters of the students (71%) were in Grades K-5 and over half (54%) were in Grades K-3.

2. More than 3,000 of the 11,482 students served in the bilingual education programs during 1985-86 were new entrants to the programs and had only participated for one year.

3. Close to one out of every five students in bilingual education (2,113, or 19%) were late entrants or left the program prematurely; over 1,500 of these students (14% of the student population served) spent less than 90 days in the program. The primary reason reported for the high rate of student mobility was that students' families moved out of the district.

4. Total expenditures for the bilingual education programs amounted to $34.8 million in 1985-86*. Of this amount, the state contributed $1.9 million, or 5.5%. Using a base figure of 11,482 students served, the state's average per-pupil contribution was $167. Local school district funds supported the majority of program costs ($18.6 million, or 53.5%). Remaining funds ($14.3 million, or 41%) came from sources such as Chapter 1 and Title VII.

5. Slightly more native language instruction was offered to students who were continuing in the bilingual education program than to those who were exiting. The amount of native language instruction that a student received was more likely to be related to length of time in the program than to the student's grade level. In programs which were studied in more depth, the amount of English instruction increased as students continued in the bilingual education programs.

6. Approximately 75 of the 196 12th graders who were enrolled in bilingual education programs in 1985-86 were accepted to college or other post-secondary training (e.g., business school, technical school).

Exiting Students

7. Approximately 10% (902 out of 8,835) of the students served in bilingual education programs in 1985-86 exited the program and entered all-English classrooms. The average amount of time these students spent in a bilingual education program was 3.6 years; 50% spent three years or less. In general, the probability of exiting increased as students spent more time in the bilingual education program.

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*These figures are based on unaudited data reported by the school districts as of June 1986, after the proposed State Budget for 1987-88 had been prepared.

8. English proficiency and achievement scores were very positive for elementary school students who exited from the bilingual education programs. On average, exiting students in Grades K-2 exceeded the targeted level of performance in language proficiency, while those in Grades 2-5 exceeded the targeted levels of performance in both English mathematics and English language arts, and scored just below the targeted level of performance in English reading. Nearly two-thirds (61%) of the students exiting Connecticut's bilingual education programs were in Grades K-5.

9. On average, exiting middle school students (Grades 6-8) met the targeted level of performance in English mathematics and scored just below this level in language arts. Results in English reading and oral language proficiency were substantially below expectations.

10. At the high school level (Grades 9-11), English scores for exiting students were consistently below the targeted levels of performance in reading, mathematics, language arts, and oral language proficiency. Low scores in the upper grades seem to reflect a greater urgency on the part of districts to mainstream older students into all-English classrooms quickly, even though their English skills may still be low.

Continuing Students

11. Almost three-fourths of the students served by the bilingual education programs (71%) were scheduled to continue in the program the following year. The majority had been in the program for a relatively short length of time (40% had been in the program for only one year) and required more time to improve their English skills. The proportion of continuing students decreased with each advancing year spent in the bilingual education program.

12. Students continuing in the bilingual education programs who received academic instruction in Spanish made very good progress in Spanish reading and mathematics. On average, elementary students scored approximately at national norms in both Spanish reading and Spanish mathematics. Seven out of nine districts reported achievement gains in reading; eight out of nine districts reported gains in mathematics, with five of the eight recording gains which were significantly better than average. Research indicates that strong academic skills in the first language readily transfer to English.

13. English achievement results for students continuing in the bilingual education programs were substantially below the targeted levels of performance in English reading and language arts at all levels, and in English mathematics at the middle and high school. This finding confirms that these students were not yet ready to leave the bilingual education programs and enter all-English classrooms. Most of these continuing students had participated in the bilingual education programs for a short amount of time (40% had participated for only one year) and were at the earliest stages of English skill development. Research indicates that several years of exposure in a bilingual education program may be necessary before large gains in achievement begin to appear and students start to "catch up" to their English-speaking classmates.

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SECTION I: EVALUATION OVERVIEW

This report presents the results of the annual statewide evaluation of bilingual education programs in Connecticut for 1985-86. Bilingual education programs have existed in Connecticut since 1977, with the passage of Sections 10-17b-g of the state's General Statutes. During the first seven years of program operations, districts evaluated their own bilingual education programs, using a variety of evaluation approaches. In 1984, the State Department of Education established formal evaluation guidelines, and the first statewide evaluation of bilingual education was conducted in School Year 1984-85. The present report follows the same basic format as the 1984-85 evaluation, which was completed in March 1986.

Although bilingual education programs in Connecticut have now been evaluated statewide for two consecutive years, it is important to keep in mind when reading this report that the bilingual education evaluation design is not longitudinal; that is, the data in this report do not measure a second year's progress for the same group of students who were evaluated last year. Because of the highly mobile nature of the population of students served by bilingual education programs, a sizable number of students who were in the programs last year have now left the districts and are no longer included in the evaluation; according to last year's evaluation report, 2,113 students, or 19% of those who received program services in 1984-85, were regarded as transient. At the same time, a separate group of new students have entered who were not enrolled last year: more than 3,000 of the 11,482 students served in the bilingual education programs during 1985-86 were new entrants and received bilingual education services for only one year. A third group of 664 students (6% of last year's total) are no longer included in the evaluation because they exited the bilingual education program in Spring 1985 and spent the 1985-86 school year in all-English classes.

Under the present evaluation design, it is not possible to trace the progress of individual students over several years' time in the bilingual education programs. Thus, the reader should consider this report as a snapshot of only one year's progress; the reader should not assume that scores will reflect two years of program participation, since the student population which is being evaluated has changed substantially.

Bilingual education programs in Connecticut have two purposes. As outlined in Section 10-17a of the General Statutes of Connecticut (1985), "the purpose of [any bilingual education] program shall be to enable children to become proficient in English." Statute 10-17e further stipulates that limited English proficient children are to be placed in bilingual education programs "until such time as such children attain a level of proficiency in English which is sufficient to assure equal educational opportunity in the regular school program..." Thus, the second purpose of bilingual education is to prepare students academically so that they can succeed in all-English classrooms. The statewide evaluation of bilingual education programs was designed in 1984 to measure the degree to which districts were achieving these two purposes.

The evaluation information presented in this report summarizes scores on language proficiency and achievement tests collected by the districts, as well as some general demographic information of interest, such as the length of time children spent in the program, sources of program funds, and staffing patterns. This information is organized in six sections. Section I presents an overview of the evaluation design and its limitations. Section II summarizes demographic information to provide an evaluation context which describes the types of students served and the types of bilingual education programs offered. Section III discusses the manner in which students' test scores have been analyzed and how they should be interpreted. Section IV presents achievement test scores in basic skills for those students who are continuing in the bilingual education programs. Section V presents scores on English achievement tests and language proficiency tests for those students exiting the programs. Finally, Section VI offers conclusions and recommendations.

We turn now to a description of the design used to evaluate the bilingual education programs. In 1985-86, twelve such programs operated, serving 11,482 limited English proficient students from eight language groups. It is important to note that not all limited English proficient students in Connecticut are served in bilingual education programs. Current law requires that bilingual education services be provided only when there are twenty or more students attending the same school who are dominant in the same non-English language. If eligible students number less than twenty in a given school, they are provided alternative educational programs such as supplementary English for Speakers of Other Languages, or in some cases, voluntary, district-supported bilingual education programs. This report is concerned only with the academic and linguistic progress of students who are served in Connecticut's state-mandated bilingual education programs.

Evaluation Design

The evaluation design was developed in 1984 by members of the State Department of Education's Office of Research and Evaluation and the Bureau of School and Program Development, with assistance from local bilingual education program representatives. The evaluation was designed to answer the following questions:

1. How effective are the bilingual education programs at preparing students in the basic academic skills so that they can successfully achieve at levels comparable to their English proficient peers?

2. How effective are the bilingual education programs in increasing students' English proficiency so that upon exiting the program their level of proficiency is comparable to their English proficient peers?

3. What characteristics of the bilingual education programs are most effective at increasing English proficiency for limited English proficient students?

In this evaluation report, the first question was assessed by analyzing student achievement on norm-referenced tests of basic skills. Since students continuing in bilingual education programs received part of their instruction in English and part in their dominant language, districts tested children in the language which matched their instructional program. For example, a child who received reading instruction only in Spanish would have been given a reading test in Spanish; a child who received reading instruction in both Spanish and English would have been tested for reading ability in both languages. Students dominant in a language other than Spanish would have been tested only in English, since no adequate norm-referenced achievement tests exist in languages other than Spanish. Test scores were not analyzed for students in Kindergarten or Grade 1 since available measures are generally not as reliable or valid for children younger than 2nd grade.

The second evaluation question refers only to those students exiting the bilingual education programs. This question was assessed by analyzing student scores on English language proficiency tests which were administered prior to exit from the program.

The third question was originally intended to be answered by correlating student outcomes with various program characteristics, such as length of time in the program and amount of daily native language instruction. However, it is not possible to separate the effects of specific variables on student achievement since these relationships are confounded by numerous other program characteristics which work in concert to produce student outcomes (such as the teacher's language ability and training). Instead, this question calls for a rich description of bilingual instruction and program administration which can only be obtained through qualitative classroom observations. For the purposes of this report, the third evaluation question was addressed by summarizing selected demographic data instead.

Students participating in the bilingual education programs were divided into four evaluation groups. As shown in Table 1, reporting requirements varied for each group on the basis of the extent of the group members' involvement in the program. Districts were to report demographic data for all four groups, but were not required to report achievement test scores for students who were transient (Group 1), or who left the programs for reasons other than increased English proficiency, such as high absenteeism and truancy (Group 2B).

Districts were required, however, to report matched pre- and posttest scores in reading, language arts, and mathematics in the appropriate language of instruction for all students who were continuing in the program (Group 3). They were also required to report English posttest achievement scores and English language proficiency scores for all students who were exiting because of increased English proficiency (Group 2A).

Table 1
Summary of Reporting Requirements by Evaluation Group

Evaluation Group	Demographic Data	Language Proficiency Test Exit Level	Basic Skills Achievement Pretest	Basic Skills Achievement Posttest
Group 1				
Mobile or Transient Students	X			
Group 2A				
Exiting Students - Increased English Proficiency	X	X		X
Group 2B				
Exiting Students - Reasons Other Than English Proficiency	X			
Group 3				
Continuing Students	X		X	X

Descriptions of the groups are as follows:

Group 1 - Mobile or Transient Students

Students were classified as Group 1 if they received fewer than 90 days of instruction during the current school year. Demographic data such as language dominance and reason for exiting were reported for these students. No test data were reported.

Group 2A - Exiting Students - Increased English Proficiency

Students were classified as Group 2A if they met two of the following three state criteria for exiting due to increased English proficiency: (1) scored at or above the 50th percentile on a standardized English proficiency test; (2) attained at least average academic grades or other periodic indicators of achievement in English; and (3) elicited an interviewer's judgment of sufficient communication skills in English to participate fully in a regular classroom. For this group, classification was not based on a minimum number of days of instruction.

Demographic and test data were recorded for each Group 2A student. This information included the exit level scores from a language proficiency measure such as the Language Assessment Battery which is currently used in most districts, and posttest scores from the district's norm-referenced English achievement tests.

Group 2B - Exiting Students - Reasons Other Than English Proficiency

Students were classified as Group 2B if they exited from the program for reasons other than English proficiency in the current year and if they received a minimum of 90 days of instruction. These students may have exited from the program for reasons such as high absentee rate, truancy, or moved out of the district.

Only demographic data were reported for these students; no test data were reported.

Group 3 - Continuing Students

Students were classified as Group 3 if they were remaining in the program for the following year and if they received a minimum of 90 days of instruction.

Demographic and matched pretest/posttest achievement data in Spanish or English, depending on the instructional program, were reported for these students.

Limitations of the Design

It is appropriate at this point to discuss the limitations of the current evaluation design before the data are presented, so that results can be interpreted accurately. As designed, the state's current quantitative evaluation approach can answer some broad questions about program impact, but it also has five inherent weaknesses which are common to most evaluations of bilingual education programs. These weaknesses, discussed by Prince (1987), are as follows:

- First, as Hakuta (1985:1) points out, "most evaluations only tell us whether programs work or do not work, rather than why they may or may not work." The current evaluation design excludes process information which would indicate why some programs work better than others.

- Second, the evaluation report gives very little information on the participants who are being evaluated, the contexts in which the programs operate, or the types of implementation problems faced by the programs, which Willig (1985) emphasizes must be documented whenever one attempts to evaluate the effectiveness of a program.

- Third, under the present evaluation design, districts are required to aggregate test scores across schools and across language groups before reporting annual results to the state in order to simplify data analysis. However, the aggregation of test results across districts tends to blur important distinctions between and among programs, which may wash out positive program effects.

- Fourth, the evaluation is designed to measure only one year's progress between pre- and posttesting, whereas researchers such as Troike (1978:9) suggest that bilingual instruction may have cumulative effects which are not shown by "short-term, one-year-at-a-time evaluations." Furthermore, students who have graduated from the bilingual education programs and who are now succeeding in all-English classrooms are excluded from the current evaluation design.

- Fifth, program effectiveness is measured by standardized achievement tests which have been normed only on native English-speaking populations; even the Spanish version of the Comprehensive Test of Basic Skills (the only standardized Spanish achievement test on the market) is a direct translation of the English test and uses the same norms developed for the English language version.

The bilingual education evaluation design is currently undergoing revisions which address these weaknesses. In some cases, the ways in which the data are collected and aggregated can simply be changed. In other cases, the evaluation information lacking in the current evaluation report must be obtained from supplementary research projects. These changes in the evaluation design will improve the accuracy of future program assessments and will provide a richer description of the status of bilingual education statewide.

Summary of Section I

The purpose of this report is to summarize demographic, achievement, and language proficiency data for the 11,482 students in Grades K-12 who were served by Connecticut's twelve bilingual education programs during the 1985-86 school year. The data upon which this report is based were collected by the districts as of June 1986.

Although this is the second annual report on the state's bilingual education programs, one should not assume that students' scores will reflect two years of program participation, since the population of students served in bilingual education programs changes every year. Rather, this report analyzes one year's progress made by limited English proficient students between pre- and posttesting cycles.

The evaluation design is based on three questions which address gains made by program participants in English proficiency and in basic skills, and the identification of characteristics which may contribute to program success. The evaluation design is presently under revision in order to eliminate five areas of weakness which affect the manner in which outcomes are interpreted.

SECTION II: EVALUATION CONTEXT

Highlights: Evaluation Context

- Connecticut's bilingual education programs served 11,482 students in 1985-86, a 2.5% increase in enrollment since last year; 93% of the program participants were dominant in Spanish. Close to three-quarters of the students (71%) were in Grades K-5 and over half (54%) were in Grades K-3.

- Total bilingual education expenditures for 1985-86 amounted to more than $34 million. This figure is 58% higher than the total amount reported last year, but the majority of the difference is traceable to improvements in local reporting practices, and not to actual increases in funding.

- The state contribution to bilingual education programs was $1.9 million, or 5.5% of the total program expenditures. On average, the amount of money contributed by the state to the education of each child in the bilingual education programs was $167. Local school district funds supported the majority of program costs ($18.6 million, or 53.5%).

- Nearly one hundred additional full-time equivalent (FTE) staff members were hired by the bilingual education programs in 1985-86, including 69 teachers. The number of FTE program employees increased in five categories during the year (teachers, aides, support service staff, clerical staff, other), but the number of administrators responsible for overseeing their duties remained the same. The statewide ratio of administrators to program staff was approximately 1-to-79.

- The statewide student-teacher ratio was approximately 1-to-19. This figure may underestimate average class size, however, since at least one district included resource teachers in its teacher count. Average class size depended primarily on the type of bilingual education program offered.

- The most common bilingual education program types in the elementary grades were self-contained classrooms, in which one teacher provided instruction in both languages, and team-teaching models, in which two teachers shared instructional responsibilities. In the junior high and high school grades, the most common program type was instruction in departmentalized settings.

- Slightly more native language instruction was offered to students who were continuing in the bilingual education program than to those who were exiting. Most students received two or more hours of native language instruction daily, with the balance of the school day spent in English. The amount of native language instruction that a student received was more likely to be related to length of time in the program than to the student's grade level.

- Close to one out of every five students in bilingual education (2,113, or 19%) was considered transient; over 1,500 of these students (14% of the student population served) spent less than 90 days in the program.

- Students exiting the program due to increased English proficiency comprised 10% (902 out of 8,835) of the total number of students eligible to exit. The average amount of time these students spent in a bilingual education program was 3.6 years; 53% spent three years or less. In general, the probability of exiting increased as students spent more time in the program developing their English skills.

- Almost three-fourths of the students served by the bilingual education programs (71%) were scheduled to continue in the program the following year. The majority had been in the program for a relatively short length of time: 40% had been in the program for only one year, and 78% had been in the program for three years or fewer. The proportion of continuing students decreased with each advancing year spent in the program.

- Approximately 75 of the 196 12th graders who were enrolled in bilingual education programs during 1985-86 were accepted to college or other post-secondary training (e.g., business school, technical school).

Enrollment Patterns

Connecticut's bilingual education programs served 11,482 students in Grades K-12 during 1985-86 (see Appendix A). This figure represents an increase of 275 students, or 2.5%, since 1984-85. The number of program participants increased in eight of the districts which offer bilingual education programs (Bridgeport, Danbury, Meriden, New Britain, New Haven, New London, Norwalk, and Waterbury), while enrollment declined in the remaining four (Hartford, Naugatuck, Stamford, and Windham). The largest changes in numbers of students served in the bilingual education programs occurred in Bridgeport (where enrollment increased by 193 pupils, or 10%), and in Hartford (where enrollment decreased by 162 pupils, or 3%). The most dramatic change relative to the size of the program occurred in Danbury, where the bilingual education population increased by 34 students, or 44%.

The distribution of program participants across districts and across grades remained relatively unchanged between the 1984-85 and 1985-86 school years. Approximately half of the bilingual education program students in the state attended school in Hartford; another fourth attended school in Bridgeport or New Haven. In addition, the majority of students served by the bilingual education programs (8,126, or 71%) were concentrated in Grades K-5; over half (6,184, or 54%) were enrolled in Grades K-3 alone. An additional 1,817 students (16%) were served in Grades 6-8, and 1,539 students (13%) were served in Grades 9-12 (see Appendix B).

Appendix C breaks down program enrollment by students' native languages. Spanish continues to be the predominant non-English language spoken by Connecticut students; 10,726 pupils, or 93% of the total bilingual education population, were reportedly dominant in Spanish. The remaining 756, or 7%, were dominant in one of seven other languages: Portuguese, Cambodian, Laotian, Vietnamese, Polish, Italian, or Haitian Creole.

Fewer speakers of Portuguese, Laotian, and Vietnamese were enrolled in bilingual education programs this year, while enrollment increased in the Cambodian, Polish, and Italian programs. The number of Haitian Creole speakers in Stamford has also steadily increased over the past several years so that an eighth language group, Haitian Creole, has now been added to the pool of language groups served. Substantial increases in Cambodian and Polish

program enrollment moved both language groups ahead in the rank of language groups served. Cambodian programs in Bridgeport and Danbury gained 24 students (a 20% increase), making Cambodian the third, instead of the fifth, most widely-spoken non-English language in Connecticut's bilingual education programs. The addition of 42 new Polish-speaking students in Hartford and New Britain (a 140% increase) also moved Polish ahead of Italian in proportion of student enrollment.

Funding Sources

Appendix D presents estimated expenditures for the bilingual education programs in 1985-86; these figures are unaudited and were reported by the local districts as part of program evaluation reporting requirements (ED-230).* The reader should bear in mind that approximately two-thirds of the 1985-86 bilingual education funds were expended by the Hartford School District, which has substantially revised its procedures for calculating the financial data reported in Appendix D. Hartford staff report that "these revised procedures have resulted in much larger and more accurate estimates of program expenditures than those submitted last year; the differences between these financial data and those from last year are primarily due to the revised methods of obtaining them, and should not be interpreted to represent large changes in actual expenditures."

As shown in Appendix D, total bilingual education program expenditures amounted to $34,823,566 this year. This amount is $12,787,616 (58%) more than the estimated program expenditures for 1984-85, though Hartford's improved reporting procedures were largely responsible for this increase. The state contribution to the operation of the bilingual education programs, which is based on an enrollment formula outlined in Section 10-17h-8 of the Connecticut Regulations, was $1,913,301, or 5.5%. This amount represents an increase of $108,301, or 6%, in state funding since last year. However, since funds obtained from the local school districts and from other sources (such as Chapter 1, Migrant Education, Title VII, and Special Education) amounted to an even greater share of program expenditures this year, the proportion contributed by the state to the operation of the bilingual education programs was actually lower this year than last (5.5%, as opposed to 8.2%). Since Hartford's estimates are now more accurate, the lower percentage is probably a truer estimate of the state's contribution. Given the fact that 11,482 students were served by the bilingual education programs in 1985-86, the average per-pupil contribution by the state was $167.

Responsibility for funding the bilingual education programs continues to rest primarily with local school districts. Over half of the bilingual education program funds (53.5%) were provided locally; this contribution totaled $18,634,153. While this figure is more than $7 million greater than the estimated local expenditures reported last year, over $5.9 million of this difference appears in Hartford's data. Thus, most of the difference is likely to be due to changes in reporting procedures rather than to increased funding.

Funding from outside sources (Special Education, Chapter 1, etc.) amounted to $14,276,112 in 1985-86. This amount was allocated for special education or remedial education services to limited English proficient students who also

*These figures were reported by the school districts as of June 1986, after the proposed State Budget for 1987-88 had been prepared.

happened to be in bilingual education programs. The total amount is approximately $5.6 million greater than the total reported in 1984-85. The bulk of this increase is also likely to be due to improved reporting procedures rather than to actual increases in funds, since each district was able to provide a more accurate estimate of outside funding sources this year. Note, however, that only seven districts received funding from other program sources. Five districts reported that they received no outside funding for their bilingual education programs, relying entirely on state and local monies instead.

Staffing Patterns

As would be expected, increased student enrollment has necessitated accompanying increases in bilingual education program staff. Staffing patterns for 1985-86 are presented in Appendix E; these figures are unaudited and were reported by the school districts.

Program staff serving the bilingual education programs were divided into six categories: Administrators, Teachers, Aides, Support Service Staff, Clerical Staff, and "Other" staff members such as home/school coordinators, assistant teachers, research/evaluation specialists, social and community workers, and testers. Districts reported that approximately 853 full-time equivalent (FTE) staff were employed to serve the bilingual education programs in 1985-86, an increase of 95.5 full-time equivalent staff members since the previous year; 69 of the additional FTE staff members were teachers. It is significant that during the year the number of full-time equivalent employees increased in each of the six categories except Administrators, which remained virtually unchanged. This means that on average, each administrator in the state's bilingual education programs is currently responsible for overseeing the work of almost 79 FTE staff members. This ratio ranges from a low of 1-to-6 in Naugatuck to a high of 1-to-164 in Bridgeport. The extremely small number of staff members employed to administer the bilingual education programs is an area of program weakness which demands immediate attention, especially now that the programs have hired close to one hundred more FTE staff (a 12.6% increase) and student enrollment has increased by 275 students, or 2.5%.

The student-teacher ratio in the bilingual education programs is slightly lower than the 1-to-21 ratio reported last year. Based on a total enrollment of 11,482 pupils, the statewide student-teacher ratio was approximately 1-to-19 this year. This figure may be depressed, however, since Hartford included resource teachers (such as teachers of English for Speakers of Other Languages) in the teacher count at the elementary level. Thus, Hartford's figures are not indicative of average class size, and the statewide student-teacher ratio may be much closer to the ratio reported last year. Average class size depended primarily on the type of bilingual education program offered: teacher-student ratios were higher in self-contained classrooms than in programs where small groups of students received native language or English language instruction from a resource teacher on a pull-out basis.

Offerings by Program Type

Connecticut's bilingual education programs employ a variety of staff configurations to deliver instruction to limited English proficient children. In some cases one bilingual teacher is responsible for providing instruction in both languages, while in other cases the teaching responsibilities are divided among several teachers according to language or subject area.

Districts were asked to indicate which of seven common program types were used in their bilingual education programs at the elementary, junior high, and high school levels (see Appendix F). Those offered most frequently are summarized below in Table 2.

Table 2
Summary of the Most Frequently Offered Program Types

Grades K-5
A. Dominant language and English instruction - one teacher - self-contained classroom (10 districts)
D. Dominant language and English instruction - two teachers - two classrooms (8 districts)
F. Dominant language and English instruction - resource basis (4 districts)
Grades 6-8
E. Dominant language and English instruction - departmentalized setting (7 districts)
A. Dominant language and English instruction - one teacher - self-contained classroom (3 districts)
D. Dominant language and English instruction - two teachers - two classrooms (3 districts)
F. Dominant language and English instruction - resource basis - (3 districts)
Grades 9-12
E. Dominant language and English instruction - departmentalized setting (8 districts)

All but one district indicated that multiple program types were offered in their bilingual education programs. Choice of program type was influenced by variables such as grade level, language strengths of staff, and size of the student population served. For example, smaller programs were more likely to hire a resource teacher to provide supplemental instruction on a pull-out basis, whereas larger programs were more likely to hire full-time classroom teachers. The most common program types at the elementary level were self-contained classrooms in which one bilingual teacher was responsible for providing instruction in both languages, and paired team-teaching classrooms in which two teachers split the teaching load: one teacher was usually responsible for English instruction while the other usually provided native language instruction. The most common type of bilingual program offered in junior high and high school was instruction in departmentalized settings, in which students received instruction in different subject areas from different teachers.

Dominant Language Instruction

Districts were also asked to indicate how many hours of daily dominant language instruction were provided for each child who was either exiting the bilingual education program due to increased English proficiency (Group 2A) or continuing in the program (Group 3). These data are presented in Appendix G for each group by grade cluster. Since these data were collected and aggregated at a very general level, the conclusions which can be drawn from them are limited.

For those students exiting the bilingual education programs (Group 2A), we find that 62% were receiving over two hours of native language instruction daily. The percent of students who received more than two hours of daily native language was 61% in Grades K-2, 80% in Grades 3-5, 45% in Grades 6-8, and 41% in Grades 9-11.

For those students continuing in the program (Group 3), an even larger proportion of children (72%) followed this pattern. When broken down by grade cluster, we find that 67% of those in Grades K-2, 85% in Grades 3-5, 72% in Grades 6-8, and 60% in Grades 9-11 were receiving two or more hours of native language instruction per day.

What these data suggest is simply that slightly more dominant language instruction was provided for students who were scheduled to continue in the bilingual education program than for those who exited the program at the end of the year. This finding is not particularly revealing, since one would expect students who are preparing to leave the bilingual education program to receive more English than those who are continuing.

Although one might also expect the amount of daily native language instruction to decrease as we move into higher grade clusters, no such patterns appear in these data. This is because the amount of native language instruction that a student receives is more likely to be related to length of time in the program than to the student's grade level. Thus, an appropriate instructional program for an 8th grader who had been in the bilingual education program for only one year would probably include more native language instruction and less English instruction than would an appropriate instructional program for a 3rd grader who had been in the program for four years.

Measuring the proportion of instructional time allocated to each language, as is done in Appendix G, is probably less instructive for evaluation purposes than measuring the quality of instruction which is offered in each language. Research suggests that mere exposure is not the critical variable which leads to second language acquisition; rather, it is the presence of comprehensible language instruction which causes children to improve in their weaker language (Krashen, 1981). Thus, programs which provide meaningful, understandable English instruction for small portions of the school day may actually produce larger gains in English than programs which devote many hours to English instruction which children can not understand. According to Krashen (1981), some programs have proven successful with as little as 20 percent input in the second language. Changes now underway in Connecticut's bilingual education evaluation design will ensure that the type of information collected from districts is in concert with such research findings on program success.

Evaluation Group Enrollment - Groups 1 and 2B

Students participating in the bilingual education programs in 1985-86 were divided into four evaluation groups in Appendix H, according to the evaluation design criteria previously described in Section I, Evaluation Overview. The population totals presented in Appendix H exclude 340 students who were not assigned to an evaluation group because they had been classified as special

education - handicapped. The remaining 11,142 students were assigned to the evaluation groups as follows:

Number/Percent of Students	Evaluation Group
1,562 (14%)	Group 1 - Mobile or Transient Students
902 (8%)	Group 2A - Exiting Students - Increased English Proficiency
745 (7%)	Group 2B - Exiting Students - Reasons Other Than English Proficiency
7,933 (71%)	Group 3 - Continuing Students

Students in Groups 1 and 2B are not included in the analyses of student test scores which constitute the remainder of this report. These students either entered the bilingual programs late or left early, and therefore did not receive sufficient exposure to the program to justify analysis of program effects. The 2,113* students who fall into these categories constitute 19% of the state's bilingual education population and could be regarded as "transient." Group 1 students spent less than ninety instructional days in the bilingual education program and represent 14% of the total population served. While some Group 1 students may have left and then returned, it was not possible to track their educational progress because of their high rate of mobility.

Group 2B students are those who exited the bilingual education program for reasons other than increased English proficiency. They constitute 7% of the total population served. Group 2B students did spend more than 90 instructional days in the bilingual education program, but left for reasons such as "moved out of the district" and "dropped out of school." Following are the most common reasons why the 745 Group 2B students exited the bilingual education programs:

Percent	Reason
71%	Moved out of district
10%	Graduated from high school
6%	Parental request
5%	Dropped out of school
3%	Moved to another school within the district where there is no bilingual education program available
1%	Extended absences/truancy
4%	Other**

Note that all high school graduates have been included in Group 2B, Exiting for Reasons Other Than English Proficiency. These students are not "transient" in the sense that the other Group 2B students are who moved or dropped out of school, but they are included in this group because they left

* This transiency count does not include 194 Grade 12 students in Group 2B whose reason for exiting the program was high school graduation, not transience.

**This category included several individual reasons such as special education placement or school recommendation.

the program at the end of the year. Some of these students could also justifiably be placed in Group 2A because they met the state criteria for exiting due to increased English proficiency. However, since 12th graders constituted only 2% of the total population of bilingual education students served and few 12th graders had matched scores (due to the difficulty of collecting test data during spring of 12th grade), these students were classified in Group 2B and the data of interest for this group were limited to a few demographic variables. Only two 12th graders in the bilingual education programs were retained during 1985-86, and they had spent only one year each in the school system. The fact that the remaining 194 12th graders met the same high school graduation standards required of the native English speakers in their districts can be considered a sign of academic success for these students. Other indicators of academic success include the following:

- In Waterbury, three of the eleven bilingual education students who graduated in June, 1986, were recognized at the district's High School Awards Night for outstanding academic achievement.

- In Windham, five of the seven bilingual education students who graduated from high school in June, and one student who had exited the bilingual education program earlier in the school year, were accepted to enter college in Fall of 1986.

- In Meriden, all three of the 12th graders in the bilingual education program during 1985-86 are now attending college. In addition, one of these three students graduated with academic honors last spring.

- In Bridgeport, seven of the seventeen twelfth graders who were in the bilingual education program during 1985-86 were accepted to Connecticut colleges. One of these students was awarded Second Honors and ranked 19th out of 258 students in his graduating class. Two other students were awarded special monetary scholarships established by the Bridgeport School District; these students ranked 7th and 25th in a graduating class of 200.

- In Stamford, three of the nine graduating 12th graders were accepted to college, and three more were accepted to business school or technical school. One graduating senior received a $4,000 college scholarship, and a former bilingual education student won a $500 scholarship for an essay she had written on "What Bilingual Education Means to My Future."

- In Hartford, thirty high school seniors who were either in the bilingual education program at the time of graduation or who had exited before 12th grade were accepted to attend college in Fall of 1986. Accepting colleges included The University of Connecticut, Wesleyan University, Northeastern University, and Brown University. Thirty percent (35 out of 117) of the awards presented at the 1986 Hartford Public High School graduation ceremonies were awarded to current or former bilingual education program students. These awards included prizes in mathematics, chemistry, home economics, athletics, and citizenship. Eight students received college scholarships which had been established by the Hartford School District, and six students who had formerly been in the bilingual education program were inducted into the National Honor Society.

- In Norwalk, six of the thirteen seniors at one high school who were current or former bilingual education participants were accepted to college; two more enrolled in postsecondary training at technical institutes. Three of these 12th graders had participated in high school honors classes, and four received monetary awards or scholarships at graduation.

- In Danbury, three Cambodian students in the bilingual education program are now attending college in Connecticut. One of these students was elected to the National Honor Society, graduated from Danbury High School with First Honors, and was offered a scholarship by the University of Bridgeport.

- In New Britain, three out of seven seniors in the Spanish bilingual education program and six out of nine seniors in the Polish program entered college after high school graduation. One Spanish bilingual student and four Polish bilingual students received Honors or High Honors distinction during their high school studies.

- In New Haven, eleven of the nineteen seniors in the bilingual education program last year are presently attending college. Of these students:

  - two received awards at graduation for perfect attendance;
  - two made their school's honor roll for two consecutive years;
  - one was elected to the National Honor Society and the Spanish Honor Society;
  - two won scholarships from Wesleyan University's Center for Creative Youth to attend a special summer session on the university campus;
  - one received a scholarship from the University of Connecticut's Health Science Cluster;
  - and two students were recipients of the Lehigh Endowment Award and the School Administrators' Association Award at their schools, which were presented for academic excellence. Competition for these awards was open to all graduating seniors, including native English speakers, whom these bilingual education participants surpassed.

Evaluation Group Enrollment - Groups 3 and 2A

The remainder of this report analyzes test scores for students in Group 3 and for those in Group 2A. Group 3 includes 7,933 students in Grades K-11 who were scheduled to continue in the bilingual education programs the following year because they needed more time to develop their English skills. Group 3 students comprise the majority (71%) of students enrolled in bilingual education programs in Connecticut.

Group 2A includes 902 students in Grades K-11 who, on the basis of state exit criteria, were judged sufficiently proficient in English to exit the bilingual education programs at the end of the school year and enter all-English classrooms. Group 2A exiting students made up 8% of the total population of bilingual education students served statewide in 1985-86 (excluding special education - handicapped).

While 8% may seem to be a relatively low percentage of students exiting, the reader should bear in mind that a sizable proportion of the students served in bilingual education programs this year could never have qualified for the Group 2A category (exiting because of increased English proficiency). That is, we could not expect students to meet the state exit criteria if they were transient and spent less than 90 days in the program (Group 1), or if they left the program prematurely for reasons such as moving out of the district, truancy, and high absenteeism (Group 2B). In order to obtain a more accurate picture of the proportion of students exiting the bilingual education programs, we must subtract from the total number of students served (11,482), the 340 special education - handicapped students, the 1,562 Group 1 mobile/transient students, and the 745 Group 2B students who left the program early for reasons other than English proficiency. We are left with 8,835 students in Groups 2A and 3; these were the only students who were truly eligible to exit the bilingual education programs this year. In Table 3 this revised figure is used to calculate the number and percent of eligible students in each district who exited the bilingual education programs this year.

Table 3
Number and Percent of Students Eligible to Exit the Bilingual Education Programs Who Were Enrolled in Group 2A and Group 3

District	Total # of Students Eligible to Exit (Group 2A + Group 3)	Group 2A Exiting Students - Increased English Proficiency		Group 3 Continuing Students	
		N	%	N	%
Bridgeport	1,760	277	16	1,483	84
Danbury	74	18	24	56	76
Hartford	4,196	284	7	3,912	93
Meriden	218	43	20	175	80
Naugatuck	32	6	19	26	81
New Britain	514	58	11	456	89
New Haven	831	79	10	752	90
New London	99	23	23	76	77
Norwalk	136	23	17	113	83
Stamford	184	28	15	156	85
Waterbury	532	48	9	484	91
Windham	259	15	6	244	94
Total	8,835	902	10	7,933	90

Table 3 shows that 10% of the 8,835 students who were eligible to exit the bilingual education programs did so at the end of the school year. This proportion ranges from a low of 6% exiting Windham's program to a high of 24% exiting in Danbury. The reader should not immediately assume that districts with larger proportions of exiting students have better bilingual education programs than those which have smaller proportions of exiting students, however. Proper interpretation of these data rests on two critical variables: the length of time in the program and the level of academic achievement at which the students exit.

For example, even though Windham had the lowest percentage of exiting students, 54% of those who did not meet the state exit criteria (132 out of 244) had been in the bilingual education program for only one year. Thus, it should come as no surprise that Windham had relatively more students continuing and fewer exiting. Just as a low percentage of students exiting is not necessarily a mark of an unsuccessful program, a high percentage of exiting students does not necessarily guarantee a successful one. Danbury, for example, had the highest proportion of students exiting, but students' achievement test scores in English at the time of exit were much lower than desirable. This finding suggests that students in Danbury may be leaving the bilingual education program prematurely, before they are sufficiently prepared to handle academic coursework in English.

These examples illustrate that program success should not be determined simply by the number of students who exit each year. The goal of bilingual education is not merely to get students out of the programs quickly, but to ensure that students have acquired the necessary level of English proficiency when they do exit to compete successfully in all-English academic settings. The next section examines the amount of time that students in Connecticut's bilingual education programs needed in order to reach this level.

Length of Program Enrollment

Appendix I presents the length of time that the 902 Group 2A exiting students in Connecticut were enrolled in the bilingual education programs. The data show that half of the Group 2A students (454) spent only one to three years in the programs; an additional 20% (184) received bilingual instruction for only four years before moving into all-English classrooms. Thus, the majority of students who did successfully meet the state exit criteria did so within a relatively short amount of time. Figure 1 graphically displays the proportions of students exiting according to length of enrollment in the bilingual education programs.

Appendix J presents the corresponding data on the length of time that Group 3 continuing students were enrolled in the bilingual education programs. Appendix J shows that three out of every four continuing students (6,164, or 78%) had spent three years or less in the program; 40% alone had received only one year of bilingual instruction. The pie graph in Figure 2 divides the total number of Group 3 continuing students by the length of time

Figure 1

PROPORTION OF EXITING STUDENTS (GROUP 2A)
BY YEARS IN PROGRAM
1985-86

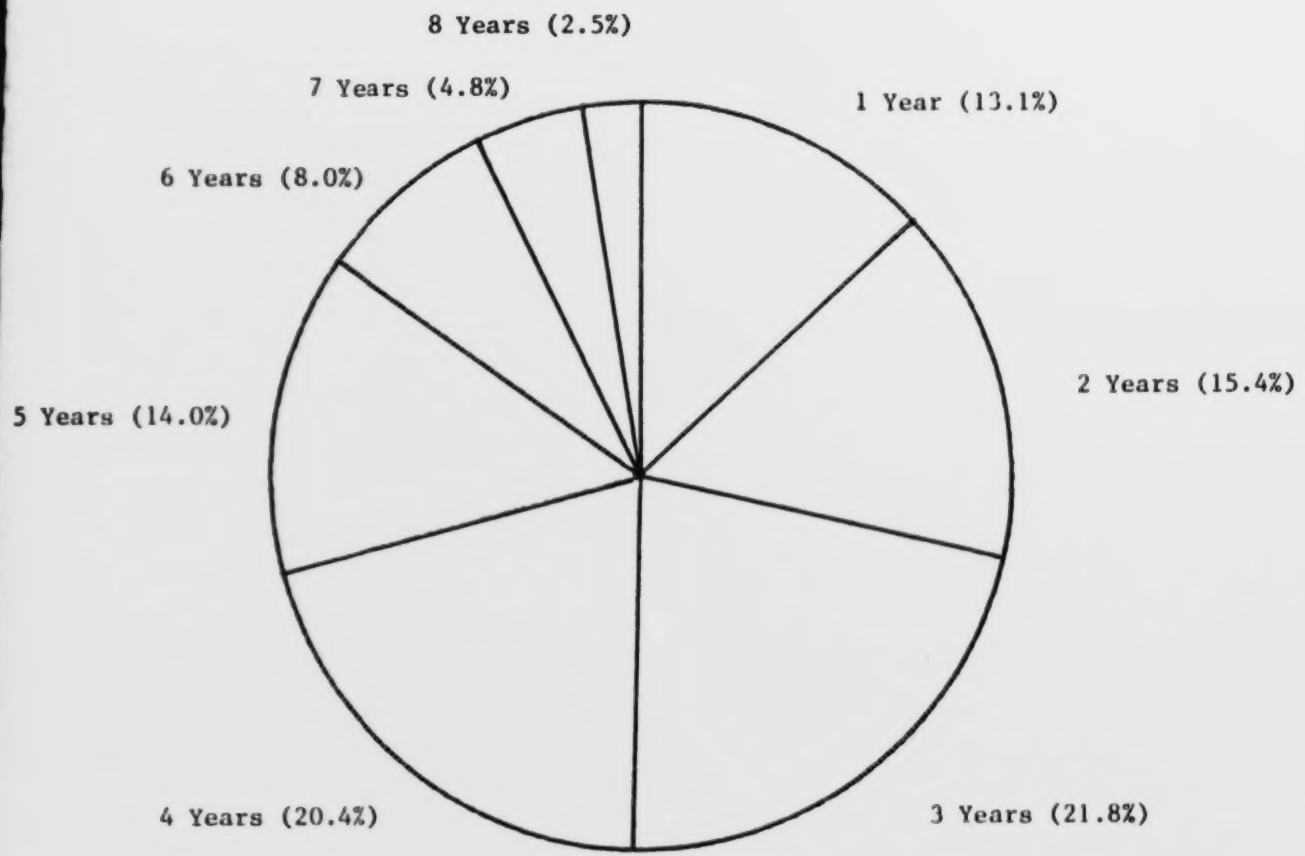
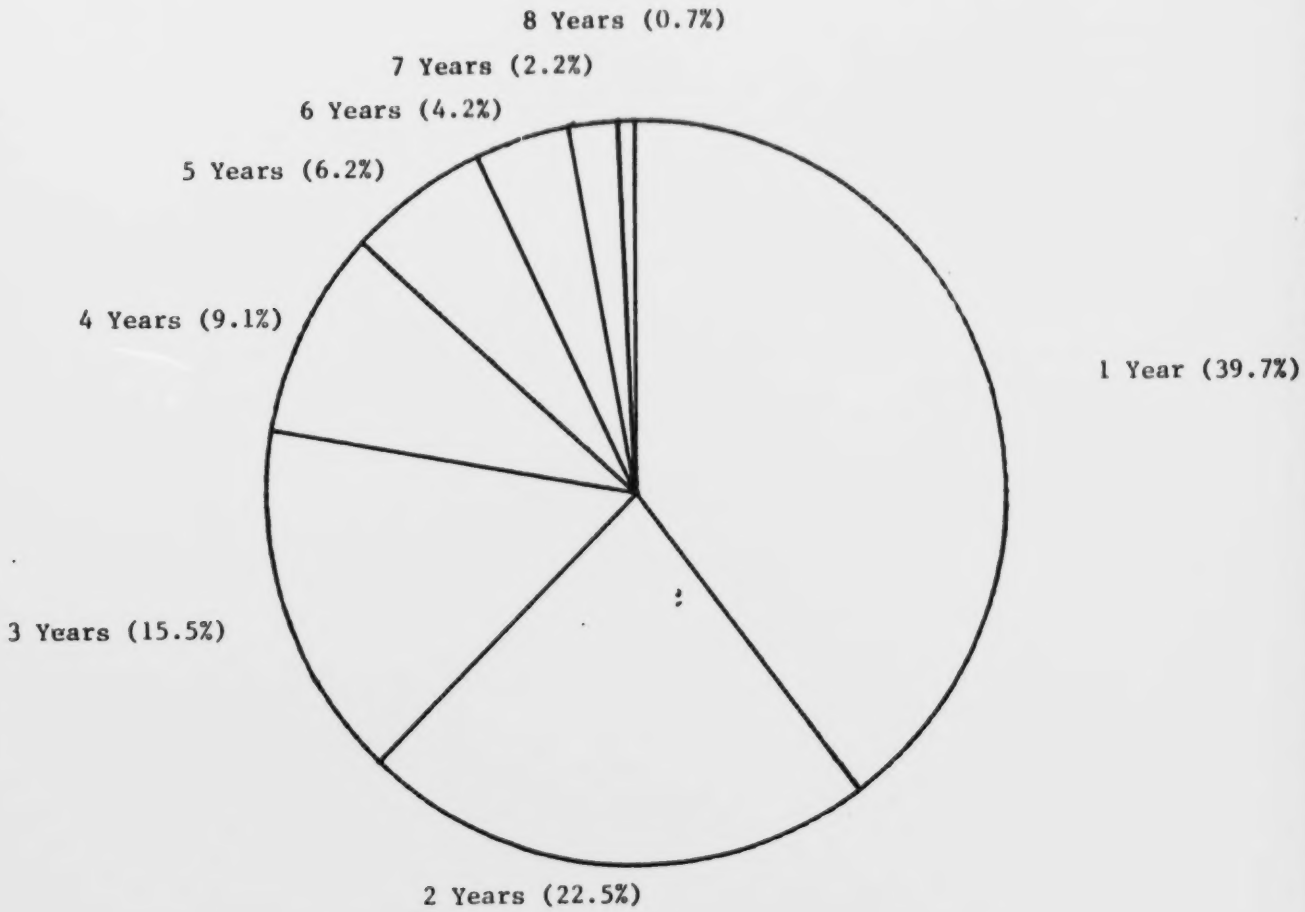


Figure 2

PROPORTION OF CONTINUING STUDENTS (GROUP 3)

BY YEARS IN PROGRAM

1985-86



they spent in the bilingual education programs. Figure 2 shows that the proportion of continuing students is largest for those who have been in the program for only one year, and that the proportion of continuing students steadily decreases with each advancing year spent in the program. Since the number of students who have participated in Connecticut's bilingual education programs for only a few years is so large, it follows that the percentage of students exiting from the program would naturally be small. We would expect the likelihood of exiting to increase as students spend more time in the bilingual education program; this is precisely what happens, as seen in Figure 3.

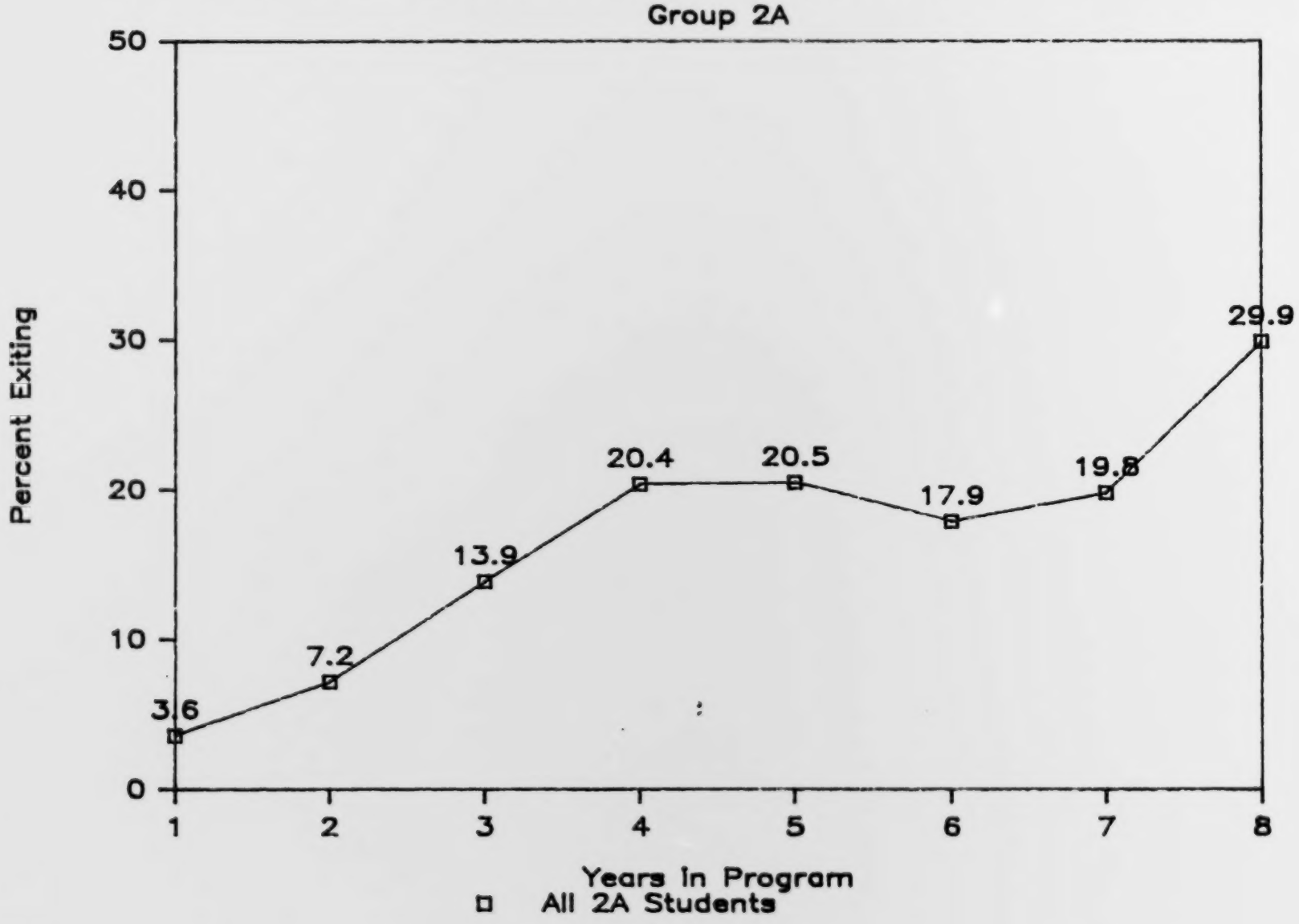
Figure 3 shows the proportion of students eligible to exit who did actually exit in 1985-86. These proportions were calculated individually for each year that students spent in the program by dividing the number of exiting students (Group 2A) by the total pool of students eligible to exit (Group 2A + Group 3). As shown in Figure 3, the percentage of exiting students steadily increases as length of time in the program increases -- only 3.6% of the eligible students who spent one year in the program exited, whereas the proportion of students exiting after spending two years in the program doubles, to 7.2%. The proportion doubles again between the 2-year and the 3-year mark -- 13.9% of the students who participated in the program for three years exited by Spring 1986. The proportion of students who exited after four years (20.4%) is nearly six times as great as the proportion who exited after one year (3.6%). The percent exiting declines slightly around the 6-year mark, and then proceeds upward again.

What this trend indicates is that the probability of exiting is partly a function of the length of time the student spends in the program. The observed relationship is not perfectly linear because some of the students may have difficulty exiting the bilingual education program for reasons which are not directly related to the amount of time spent in the program. Consider, for example, the hypothetical case of a student who has moved constantly between schools in Connecticut and Puerto Rico for four years. The progress she has made in oral English and in English academic skills is interrupted every time she moves back to the all-Spanish environment in Puerto Rico. Although this student may have spent four years in a bilingual education program in Connecticut, she may not have spent four consecutive years in the program. She will undoubtedly require several more years to meet Connecticut's exit criteria than a student who has spent four continuous years in the same program.

We suspect that the high rate of mobility characteristic of students in bilingual education programs may also contribute significantly to grade retention, since constant moving is extremely disruptive to normal academic progress. On the basis of the data presented in Appendices I and J, we find that 6% of the students exiting from the bilingual education program (50 out of 902) and 12% of the students continuing in the program (917 out of 7,931) spent an extended period of time (more than one year) within a grade. Because of the manner in which these data were collected, we can only determine retention rates for students in Grades K-6. Given the available data, the trend appears to be strongest in Grades K-3. At present, we have no comparative data on retention rates among students in all-English programs in the same schools, so it is not possible to determine whether the rate of retention in the bilingual education programs is unusual.

Figure 3

PERCENT EXITING BILINGUAL PROGRAMS



Summary of Section II

Twelve bilingual education programs in Connecticut served 11,482 students in Grades K-12 in 1985-86. The majority of these students (71%) were enrolled in Grades K-5, and 93% of the program participants were dominant in Spanish.

The bilingual education programs were funded by monies from state, local, and other sources (such as federal Chapter 1 and Title VII programs), but primary responsibility for funding rested with the local districts. Funds expended by the bilingual education programs in 1985-86 totaled $34.8 million; 5.5% of these funds ($167 per pupil) was contributed by the state. Local districts contributed $18.6 million, or 53.5%.

Although the number of students and the number of staff members both increased in the bilingual education programs, the number of administrators employed to coordinate program operations remained virutally unchanged. The average administrator-to-staff ratio in the bilingual education programs is extremely high (1-to-79) and remains problematic.

Of the students served by the bilingual education programs this year, 14% spent less than 90 days in the program, and 7% left the programs for reasons other than English proficiency (primarily, moving out of the district). The high rate of mobility among students in the bilingual education programs appears to be likely to affect both the length of time required to meet the state exit criteria and the likelihood that students will be retained within grade.

Among those students who were eligible to exit because of increased English proficiency, 10% did so at the end of the year. Analyses showed that the likelihood of exiting tended to increase as students spent more time in the program, so that the proportion of eligible students exiting after two years was greater than the proportion exiting after one year, etc. A substantial number of the Group 3 continuing students spent only a brief amount of time in the program: 78% had been enrolled for three years or fewer, while 40% had been enrolled for only one year. Thus, it is not surprising that the proportion of students requiring more time in the bilingual education program to improve their English skills was greater than the proportion exiting.

SECTION III: SPECIAL CONSIDERATIONS FOR THE INTERPRETATION AND ORGANIZATION OF THE EVALUATION DATA

Since the design used to evaluate the bilingual education programs has not changed significantly since last year's evaluation report, the guidelines for interpreting test data for Group 2A exiting students and for Group 3 continuing students remain essentially the same. The following special considerations listed in last year's report apply to this year's data as well:

1. Direct comparisons among district scores may be misleading because districts used different English norm-referenced achievement tests to assess the basic academic skills of continuing and exiting students.

2. One factor contributing to the variation of scores across grades is that different districts offer programs at different grades. Appendix A on enrollment figures by grade illustrates the variation in program offerings.

3. For continuing students (Group 3), data have been portrayed for only those districts involved in testing students at a particular grade and in a subject area. This means that average scores calculated in each grade and in each subject area can only be considered representative of those districts reporting data and not of the entire state.

4. For exiting students (Group 2A), the data submitted by districts in each grade and subject area are representative statewide since all students were to be tested.

5. The data in Figures 4-15 must be interpreted cautiously for two reasons. First, each grade cluster varies in terms of the number of districts and students represented. Second, some districts have very small populations.

Organization of Evaluation Results

Analyses of student test scores have basically been organized in the same way as last year's. Test scores for Group 2A exiting students have been displayed in the Appendices by calculating mean national percentile ranks (mean NPRs); for Group 3 continuing students, analyses of test data include the computation of mean NPRs, as well as the computation of mean normal curve equivalents (mean NCEs), and the average change in NCEs between pre- and posttesting. Appendix K provides an example which shows how to interpret these types of test data.

Figures 7 to 15 are also used this year to summarize two types of information: the range of mean percentile ranks attained by the districts in each basic skill area, and the number of districts which achieved NCE gains between pre- and posttesting. In each case, mean district achievement data have been grouped into three grade clusters (2-5, 6-8, and 9-11) to correspond to elementary, intermediate, and secondary school grades. (In the case of

Figure 12, which presents the posttest language proficiency results for Group 2A exiting students, four grade clusters are used instead of three. The four clusters -- K-2, 3-5, 6-8, and 9-11 -- correspond to the levels of the Language Assessment Battery, or LAB, which is the most widely used language proficiency instrument in Connecticut.)

The most significant change in the presentation of this year's data is related to the manner in which test scores are aggregated by grade clusters. While the use of grade clusters simplifies data presentation by reducing data for twelve grades to three clusters, this manner of presentation can also wash out significant differences in scores by presenting an average across several grades. Therefore, each grade cluster analysis is accompanied by an analysis of individual grades this year.

Setting Reasonable Expectations for Student Achievement

Proper interpretation of the test scores presented in the next two sections of this report requires an understanding of the effects of testing students in their weaker language (in this case, English), so that reasonable expectations for student achievement can be established. Therefore, the remainder of this section is devoted to a brief discussion of research findings on student performance in a weaker language and how these findings relate to Connecticut's evaluation design.

The state's present bilingual education evaluation design depends heavily on the analysis of student performance on norm-referenced achievement tests. Upon exiting the bilingual education program, students are expected to be able to take these tests in English and, according to the evaluation design, perform as well as native English speakers. The first question upon which the evaluation design is based asks:

1. How effective are the bilingual education programs at preparing students in the basic academic skills so that they can successfully achieve at levels comparable to their English proficient peers?

"Comparable" levels of achievement would lead one to expect bilingual education program participants to score at national norms (the 50th percentile) in English basic skills by the time they exit the program. This expectation is set unrealistically high for three reasons.

First, the majority of pupils exiting Connecticut's bilingual education programs do so after only three or four years (see Appendix I). Research indicates, however, that limited English proficient students may need several years beyond this amount of time to catch up to a level of academic performance comparable to native English speakers. Cummins (1981), in a study of over 1,200 French-speaking immigrant students in Toronto, found that the average amount of time required to develop face-to-face communication skills in English was only about two years. However, the amount of time required to develop age-appropriate academic skills (such as the ability to solve a problem or comprehend text in a second language) was five to seven years. Paulston (1983), too, points out that in the successful Rock Point Navajo

Bilingual Education Program in Arizona (Rosier and Farella, 1976), six years were required to bring program participants to national norms in English. These findings suggest that students exiting the bilingual education programs in Connecticut can not realistically be expected to approach the level of achievement implied in Question #1 by the time they leave the program.

Second, the expectation that limited English-speaking children perform as well as their native English-speaking peers ignores the additional cognitive demands placed on students who are tested in their second language. Macnamara's (1970) experiments with French/English and Irish/English bilinguals revealed that performance was affected in reading and in certain types of problem-solving tasks when subjects were tested in their weaker language. In reading, Macnamara found significant differences between languages in the speed at which subjects interpreted the meaning of individual words and sentences, the speed at which subjects could pronounce words, and the ability to anticipate word order. These differences in grasp of language resulted in longer decoding times in the weaker language and an increased burden on short-term memory as subjects struggled to remember relevant points in the passage while concentrating on a different section.

In mathematics, significant differences were also found in the rates at which bilinguals could solve word problems in their stronger and weaker languages (Macnamara, 1963). In a separate study, Macnamara (1966) found that bilinguals were weaker than monolinguals in problem arithmetic (which required reasoning in the bilinguals' weaker language), but not in mechanical arithmetic (which simply required computation). Macnamara attributed these differences to the same difficulties that bilingual subjects had experienced in reading their weaker language -- longer reading times resulted in a poorer grasp of the problem, which in turn resulted in inability to find the correct solution. These studies indicate that the same norm-referenced English tests may be substantially harder for limited English proficient children than for their native English-speaking peers, especially since the tests are timed. It seems unreasonable, then, to expect bilingual education program participants to attain the same scores as native English speakers on a more difficult test.

Finally, a score at the 50th percentile implies that a student did as well as, or better than, 50% of the population upon which the test was normed. By definition, half of the norm group (consisting of native speakers of English) will fall below this level. It is unreasonable, therefore, to expect students who are being tested in their second language to perform at a level which, by definition, 50% of the native English speakers in the norm group failed to meet.

Instead of expecting students to achieve at levels comparable to their English proficient peers by the time they exit the bilingual education programs (i.e., the 50th percentile), we propose that the reader consider the 35th percentile a reasonable level of achievement in English basic skills for an exiting student, for two reasons. First, previous evaluations of bilingual education programs in California indicate that a score at or around the 35th percentile in English basic skills is a fairly good predictor of a student's ability to compete academically in an all-English classroom (Spencer and

Prince, 1983-1985). In fact, California's bilingual education programs use the 37th percentile in English reading as one of their criteria for exiting the program.

Second, the 35th percentile lies approximately halfway between the remedial standard (the 23rd percentile) and national norms for native English speakers (the 50th percentile). While we can not reasonably expect exiting students to reach the same levels of performance in English as native speakers, neither can we expect them to survive academically in an all-English classroom if their skills are so low that they immediately qualify for remedial services. The 35th percentile is proposed as an appropriate performance indicator between these two standards.

The reader should bear in mind that the 35th percentile is proposed only as a general rule-of-thumb, since acceptable levels of performance will depend on the particular test used. Furthermore, the reader should note that performance on standardized achievement tests, at the 35th percentile or at any other level, is not part of the current criteria for exiting a bilingual education program in Connecticut. Thus, it is possible for students to meet the state criteria for exit, yet score below the 35th percentile in English academic skills. (See page 4 under "Group 2A - Exiting Students - Increased English Proficiency" for a summary of the current state exit criteria.) The 35th percentile is proposed simply as a guide to assist the reader as he or she examines the results presented in this report.

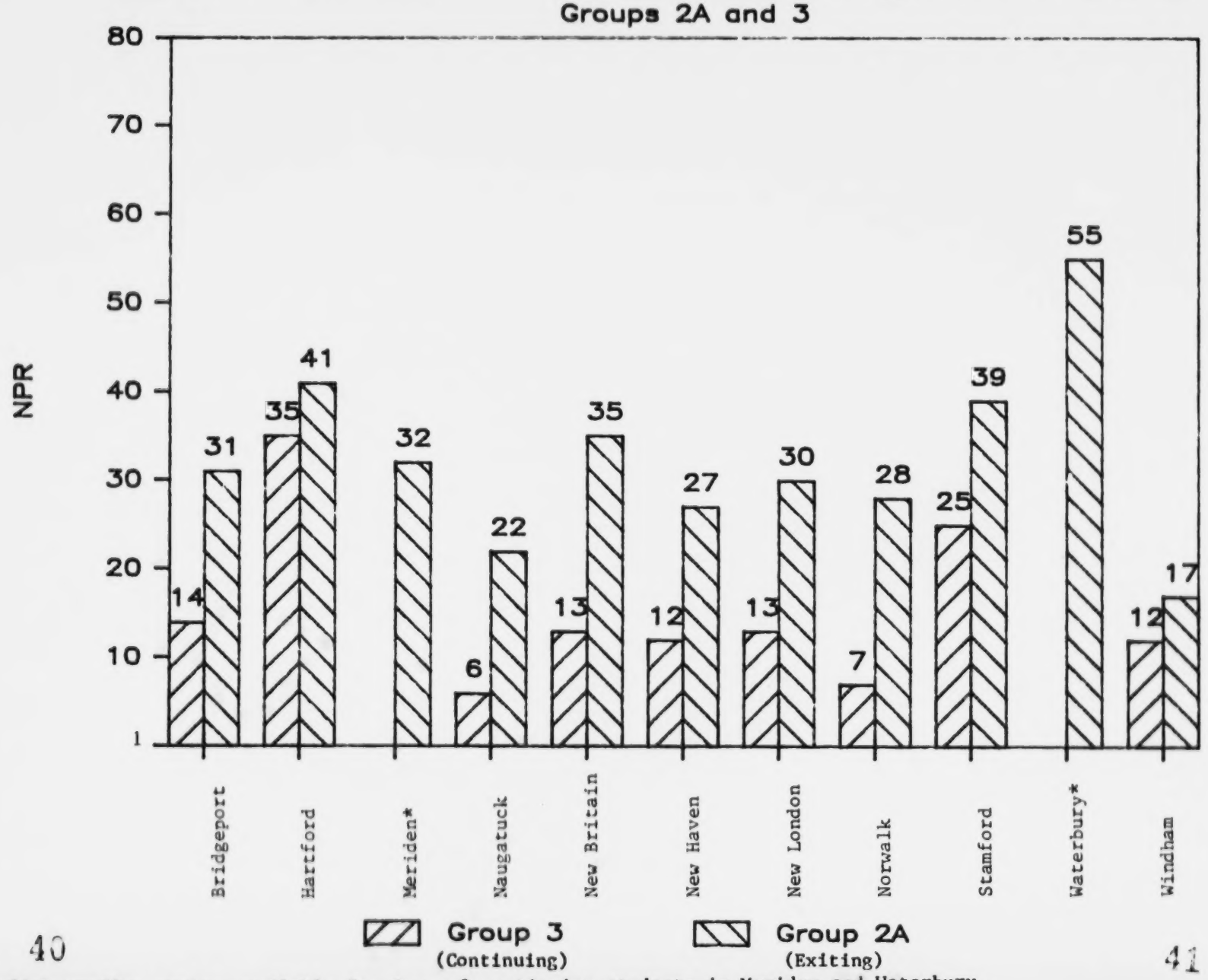
Statistical Considerations for the Interpretation of the Evaluation Data

Test score results for Group 3 continuing students and Group 2A exiting students are presented in the next two sections of this report. It is critical to the proper interpretation of these test scores that the reader be aware that those students who are most proficient in English are constantly leaving the bilingual education programs; these students make up Group 2A. Those who remain in the programs (Group 3) will naturally show lower levels of performance in English than if the scores for both groups had been averaged together. By profiling the performance of the two groups of students separately, it is readily apparent that the most successful students are skimmed off the top (either into Group 2A or into the all-English school program), resulting in lower averages for Group 3. This phenomenon becomes more pronounced in the upper grades, since most students who began their schooling in the bilingual education program have exited by the end of elementary school. Those who remain in the junior and senior high schools tend to be either recent arrivals (whose English proficiency is naturally limited) or students who are having difficulty meeting the state exit criteria because of various types of language learning problems.

Figures 4 to 6 show the effect of dividing the sample of students at each grade into those who are exiting (Group 2A) and those who are continuing (Group 3). Mean percentile ranks for 3rd graders in English reading, mathematics, and language arts are compared for Group 2A and Group 3 students in each district as an example. As expected, the mean percentile rank of the exiting students is consistently higher than that of the continuing students.

Figure 4

Mean NPRs — Grade 3 English Reading



*No English reading scores available for Group 3 continuing students in Meriden and Waterbury.

Figure 5

Mean NPRs — Grade 3 English Math

Groups 2A and 3

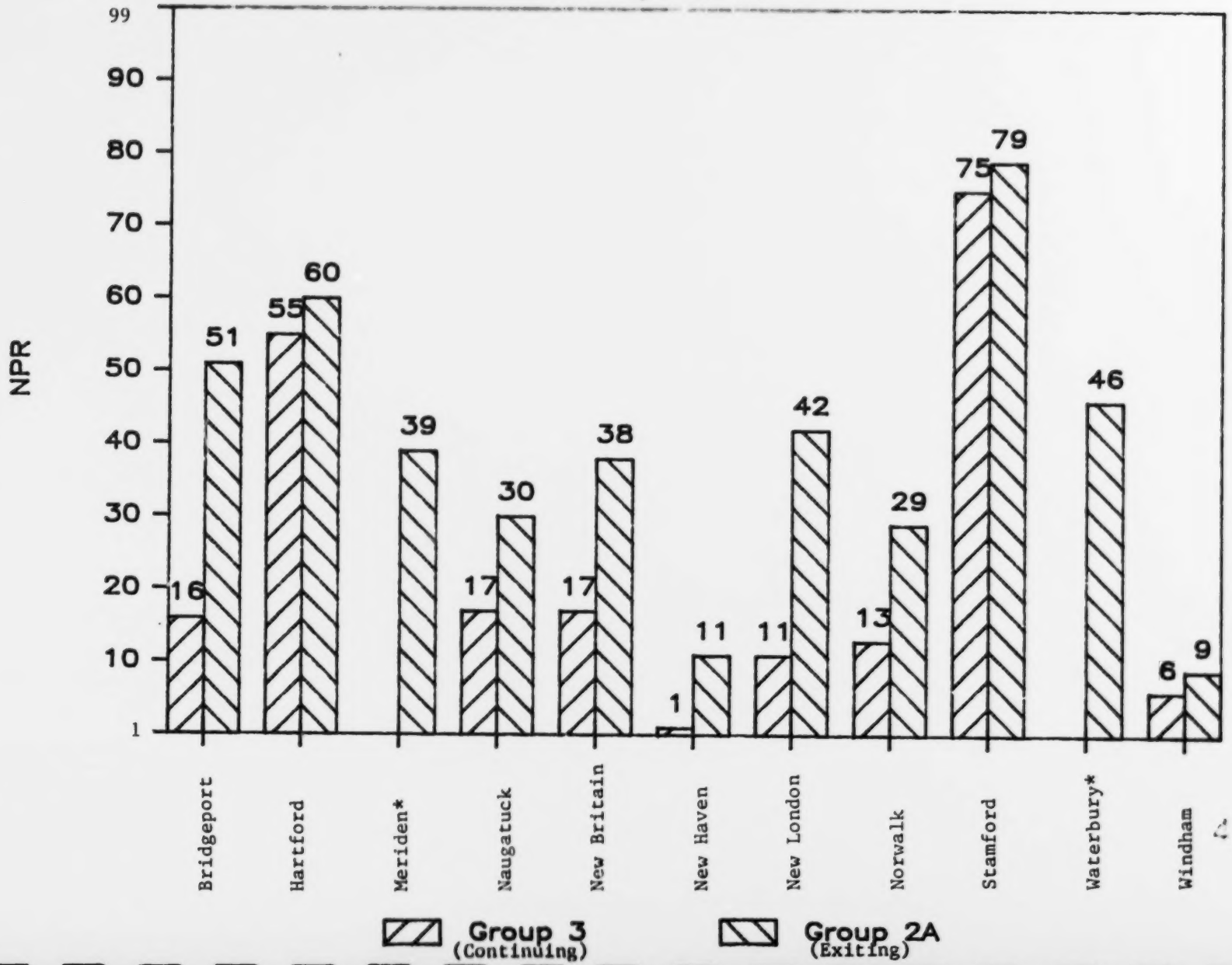
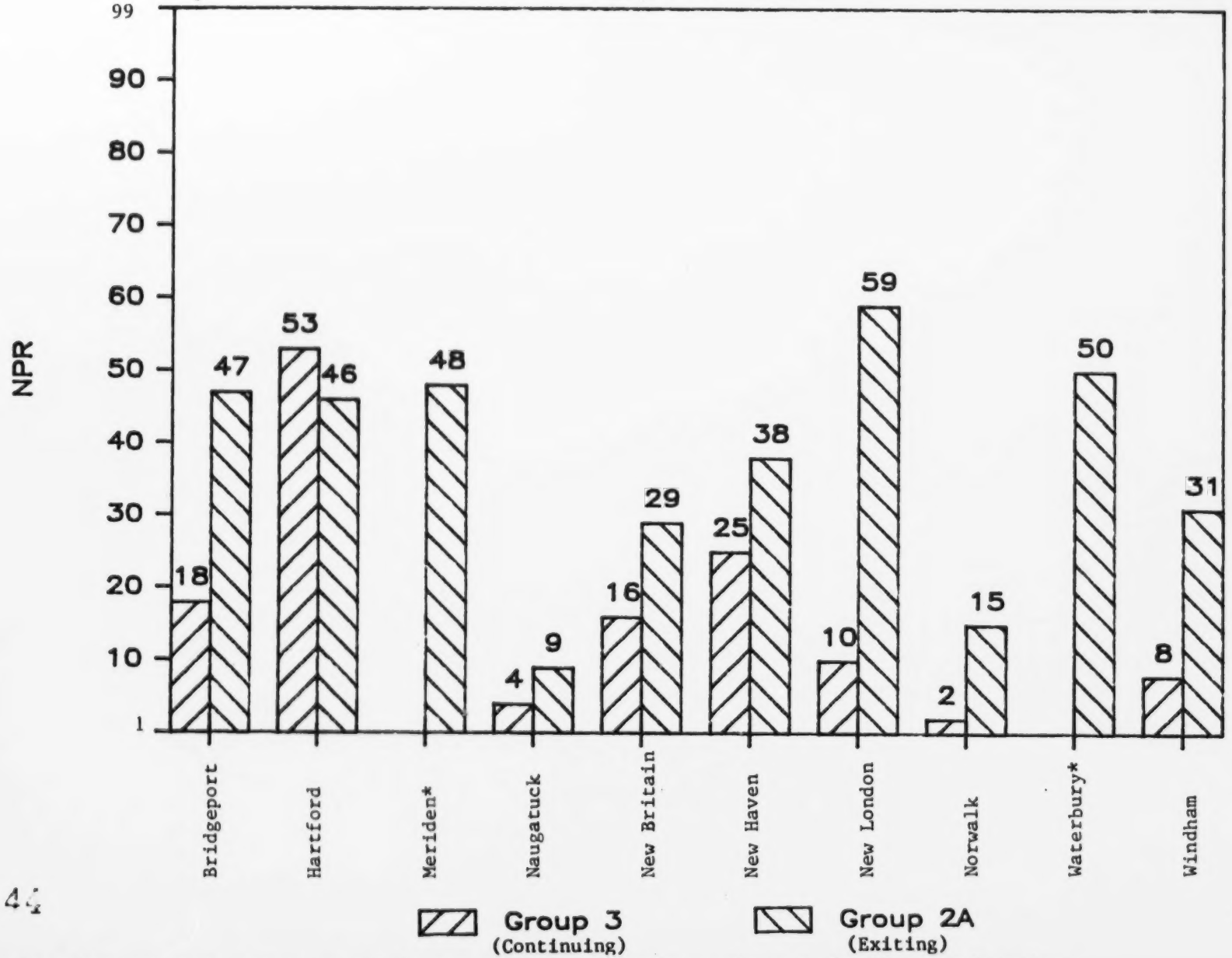


Figure 6

Mean NPRs — Grade 3 English Lang. Arts

Groups 2A and 3



*No English language arts scores available for Group 3 continuing students in Meriden and Waterbury.

(In only one case was the mean NPR of Group 2A lower than that of Group 3, and in this case both groups had mean NPRs which were approximately at national norms.) This pattern appears across districts, across subject areas, and across grades. Thus, profiling the data sample for the two groups at each grade level separately results in statistically depressed English scores for Group 3 continuing students, a phenomenon which must be taken into account when interpreting the student outcomes presented in the next sections.

Summary of Section III

The test results presented in this evaluation report are organized according to the same format used last year, except that data are now reported by individual grades, as well as by grade clusters. Proper interpretation of these results rests on an understanding of (a) the effects of testing students in their weaker language, and (b) the statistical effects created by analyzing the sample of bilingual education participants as two separate groups at each grade level. The 35th percentile in English basic skills is proposed as an appropriate expectation for students exiting the bilingual education programs. This measure is proposed only as a general rule to aid in the interpretation of results, since performance on norm-referenced achievement tests is not part of the current state exit criteria. The reader is also reminded that English test scores tend to be statistically depressed for Group 3 continuing students, since those who are most proficient in English leave the program each year (as Group 2A exiting students) and their scores are analyzed separately. Thus, English results for Group 3 continuing students will tend to be lower than those for the exiting students in Group 2A.

SECTION IV: EVALUATION RESULTS FOR GROUP 3 - CONTINUING STUDENTS

Group 3 continuing students constitute the largest proportion (71%) of children served by the bilingual education programs this year. These students are scheduled to continue in the programs during 1986-87 because they have not yet met the state criteria for exit from a bilingual education program. (See page 4 for a summary of the exit criteria.) Gains in reading, mathematics, and language arts are the data of interest for Group 3 students. The reader should keep the following points in mind when reviewing the achievement test results in this section:

(1) Districts were to test Group 3 continuing students in the language in which they received instruction. Because instructional programs differed according to students' various stages of linguistic and academic development, not all districts reported matched scores in each language or subject area. The reader should not assume that the English and Spanish achievement results which follow were attained by the same children, since most were not tested in both languages.

(2) No adequate achievement tests have been developed in non-English languages other than Spanish. Therefore, achievement was not evaluated for students dominant in languages other than Spanish unless they received English academic instruction and they were able to take an English test.

(3) The only norm-referenced Spanish achievement test which is currently on the market is the Comprehensive Test of Basic Skills (CTBS); it does not offer a language arts subtest. Therefore, only Spanish reading and mathematics scores are presented. In English, test score analyses include reading, mathematics, and language arts.

(4) Achievement test data in Figures 7-11 have been aggregated in three grade clusters at the elementary, junior high, and high school levels (Grades 2-5, 6-8, and 9-11). The number of districts reporting data in these grade clusters varies within the same figure. For example, in Figure 8, nine districts reported Spanish mathematics data for continuing students in the elementary grades, eight reported scores in this category for junior high students, and seven reported scores for high school students. This variation is caused by differences in the types of instructional programs offered at each grade level.

(5) Growth in academic achievement is measured for Group 3 continuing students in terms of changes in normal curve equivalents (NCEs) between pre- and posttesting. For the purposes of this report, an NCE change of zero between pre- and posttesting indicates that students made normal academic progress during the year and maintained their relative standing. A negative NCE change indicates a loss in relative performance over time, while a positive NCE change indicates academic growth attributable to program intervention. In this report, a gain of 5 or more NCEs is considered educationally significant. (See Appendix K for a more complete discussion of the interpretation of NCE gains.)

PART A: RESULTS OF SPANISH ACHIEVEMENT TESTS FOR CONTINUING STUDENTS (GROUP 3)

Highlights: Spanish Reading and Mathematics Achievement

- Elementary students scored approximately at national norms in both Spanish reading and Spanish mathematics at the end of the year. Seven out of nine districts reported achievement gains in reading, while eight out of nine reported gains in mathematics. Gains in Spanish mathematics were significantly better than average in five districts.

- Seven out of eight districts recorded positive NCE changes in Spanish reading at the junior high school level. In Spanish mathematics, achievement gains varied widely among individual districts: three maintained their relative level of performance, two made significant gains, and three reported declines in achievement from pretest to posttest.

- On average, Spanish reading achievement in the high school grades was above national norms at the end of the year, and seven out of eight districts maintained or improved their relative performance from pretest to posttest. High school students showed particular strength in Spanish mathematics; all seven districts improved their average performance, and six of these seven recorded achievement gains which were significantly above average.

Spanish Reading

Achievement results in Spanish reading for Group 3 continuing students are presented in Appendices L and M for the elementary grades (2-5), N and O for the intermediate grades (6-8), and P and Q for the secondary grades (9-11). Looking first at the elementary grade results, we see in Appendix L that continuing students in Grades 2-5 scored just below national norms in Spanish reading on both the pretest and the posttest. Their mean NPR on the pretest was 48 and on the posttest, 47. This slight decline in relative standing resulted in a -0.3 NCE change.

Since English reading is typically introduced at the elementary level, one would have expected Spanish reading performance to decline once students began

the transition to English reading. Instead, seven of the nine districts in Appendix L reported that students maintained or improved their relative performance in Spanish reading, which indicates that students are not losing the skills that they have already mastered in their first language.

When broken down by individual grades instead of grade clusters in Appendix M, we see that the expected decline does appear, but not until Grade 5. Students in Grades 2 and 4 gained 1.2 and 2.6 NCEs, respectively, and attained mean posttest NPRs at or near national norms (NPR = 50). Grade 3 students did show a negative NCE change, but dropped only slightly from a mean NPR of 51 to 47 in Spanish reading between the pretest and posttest. In Grade 5 the loss was greatest: fifth graders' mean NPR was 46 at pretesting and 37 at posttesting, and the change in normal curve equivalents was -5.0.

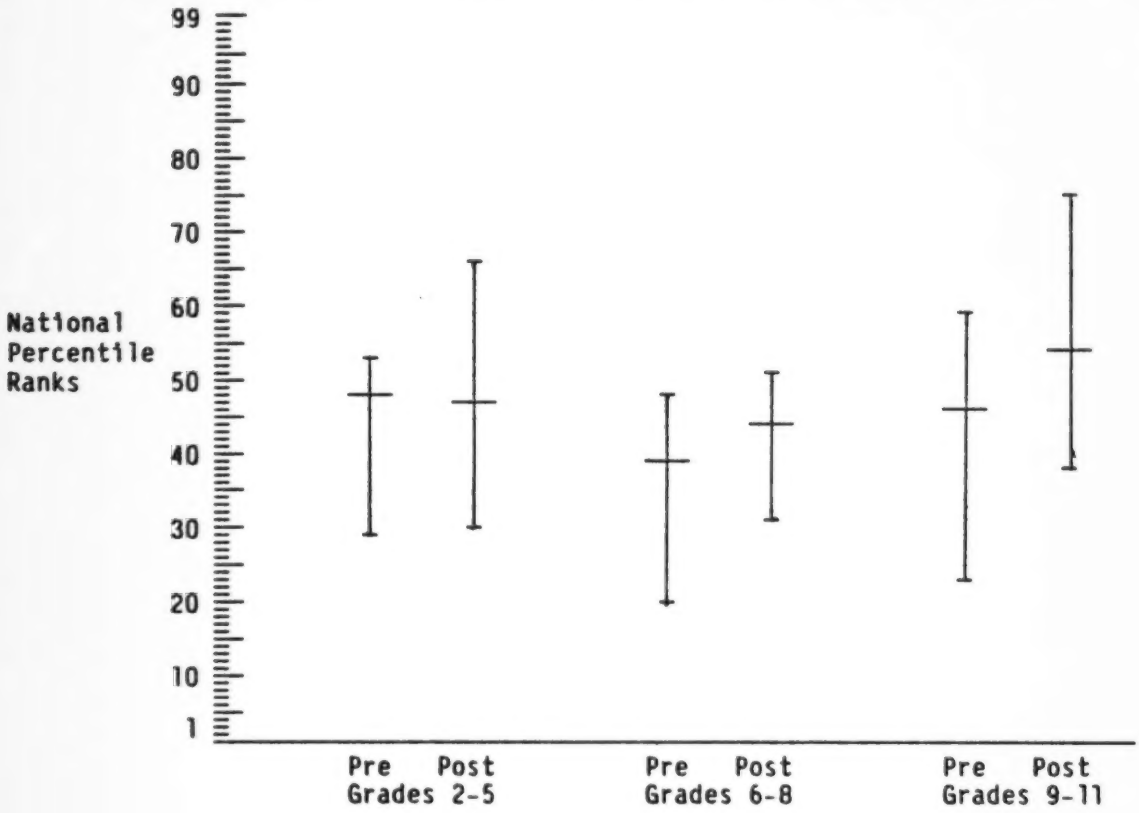
Looking now at the Spanish reading achievement results for intermediate students (Grades 6-8) in Appendix N, we see that seven of the eight districts reported positive NCE change. Intermediate students in this cluster gained an average of 2.7 NCEs and moved from a mean NPR of 39 in Spanish reading at pretesting to 44 at posttesting. In Appendix O the results show that positive NCE gains were made in all three grades: 6th graders gained 0.5 NCEs, 7th graders gained 5.2 NCEs (which is considered a significant academic gain), and 8th graders gained 3.2 NCEs. In all three grades students moved closer to national norms, with mean NPRs of 41, 45, and 48 at the time of posttesting.

Spanish reading achievement results for high school students are presented in Appendices P and Q. Students in Grades 9-11 gained 4.2 NCEs during the year and scored above the national average on the posttest, with a mean NPR of 54 across grades (see Appendix P). Individual grade data in Appendix Q show that 9th graders gained 1.6 NCEs and were just below national norms on the posttest with a mean NPR of 47. Students in Grades 10 and 11 made significant academic gains of 5.6 and 6.9 NCEs, and attained mean NPRs above national norms on the reading posttest (57 for 10th graders and 64 for 11th graders).

Spanish reading achievement results for all three grade clusters are summarized in Figure 7. The graph at the top of the page displays the range (represented by the vertical line) and average (represented by the horizontal line) of the mean district national percentile ranks (NPRs) for the pretests and posttests at each grade cluster. For example, in Grades 6-8, the average pretest score was 39 with a range from 20 to 48. The average posttest score was 44 with a range from 31 to 51.

The graph at the bottom of the page in Figure 7 indicates how many districts at each grade cluster significantly improved their performance from the pretest to the posttest in terms of normal curve equivalents (a gain of 5 or more NCES), how many maintained their level of achievement (0 - 4.9 NCEs), and how many declined between the pretest and posttest (0.1 NCE loss or greater). At the elementary grades, two districts made significant gains, five maintained their performance, and two recorded declines in mean achievement. In both the intermediate and secondary grades, seven districts maintained or improved their performance, while only one displayed a decline.

Mean District Achievement in National Percentile Ranks (NPRs)



Normal Curve Equivalent (NCE) Achievement Gains by Number of Districts

NCE Change	Grades 2-5	Grades 6-8	Grades 9-11
+5 or more NCEs	2	1	3
Zero to 4.9 NCEs	5	6	4
-0.1 NCE or lower	2	1	1

Figure 7
Spanish Reading Achievement Results
for Group 3 - Continuing Students
1985-86

Spanish Mathematics

Spanish mathematics scores are presented by grade cluster and by individual grade in Appendices R-W, using the same format as in Spanish reading. Looking first at the results for elementary grades in Appendix R, we find that the average gain in Spanish mathematics was 1.8 NCEs. On average, students in Grades 2-5 attained a mean NPR of 46 on the posttest, which was just below national norms. Results for individual grades in Appendix S indicate that 2nd graders significantly improved their performance by 6.6 NCEs and scored above grade level on the posttest, achieving a mean NPR of 53. Third graders declined by 4.2 NCEs in Spanish mathematics, but still ended the year with a mean NPR of 45. Students in both 4th and 5th grades attained mean NPRs of 40 on the posttest, improving 2.7 and 0.1 NCEs, respectively.

On average, student performance in the intermediate grades (6-8) remained basically unchanged in Spanish mathematics. Mean NPRs on the pretest and posttest were 29 and 30, and the average NCE gain was 0.6 (see Appendix T). Appendix U reveals that achievement was strongest among sixth graders, who gained 2.6 NCEs and attained a mean NPR of 40 on the posttest. Seventh graders declined in their relative standing by 1.9 NCEs and ended the year with a mean NPR of 25, while eighth graders maintained their standing at the 20th percentile in Spanish mathematics.

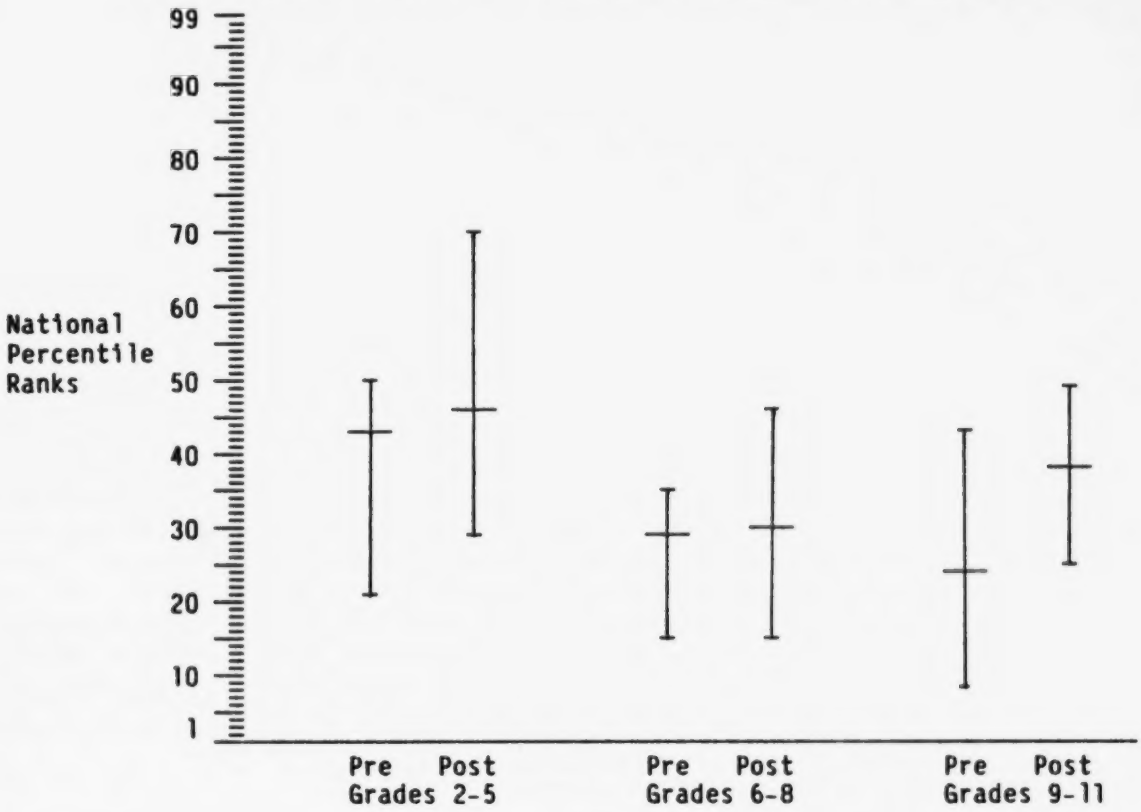
Students in Grades 9-11 made strong gains in Spanish mathematics, as shown in Appendix V. On average, they made a significant gain of 8.7 NCEs, and moved from the first quartile (mean NPR of 24) to the second (mean NPR of 38). Appendix W reveals significant improvements at each grade level: 9th graders gained 6.7 NCEs, 10th graders gained 10.1, and 11th graders gained 12.6. All three groups recorded mean NPRs in the 20's on the pretest, but mean NPRs in the 30's and 40's on the posttest.

Spanish mathematics results presented in Appendices R-W are summarized in Figure 8. Overall, the average performance of students in each grade cluster improved between pre- and posttesting. At the elementary grades, one district declined in relative performance, three districts made average gains and maintained their level of performance, and five districts made significant gains in achievement. At the junior high school level, performance varied the most: three districts declined in their relative standing, three made average gains, and two made better than average gains. The strongest gains were made at the high school level: no districts recorded negative NCE changes, one made average gains during the year, and six improved their performance significantly.

Summary of Section IV: Part A - Spanish

On the whole, students in the bilingual education programs who received academic instruction in Spanish made very good progress in Spanish reading and mathematics this year. Secondary students scored slightly above national norms on the Spanish reading posttest, while elementary and intermediate students scored slightly below this level. The majority of districts reported average or better than average gains by students in each grade cluster.

Mean District Achievement in National Percentile Ranks (NPRs)



Normal Curve Equivalent (NCE) Achievement Gains by Number of Districts

NCE Change	Grades 2-5	Grades 6-8	Grades 9-11
+5 or more NCEs	5	2	6
Zero to 4.9 NCEs	3	3	1
-0.1 NCE or lower	1	3	0

Figure 8
Spanish Mathematics Achievement Results
for Group 3 - Continuing Students
1985-86

Average performance between pre- and posttesting in Spanish mathematics also improved in each grade cluster. Average gains or better were reported by eight out of nine districts in the elementary grades, five out of eight districts in the intermediate grades, and all seven districts in the secondary grades.

These results are very encouraging, since they clearly show that those students who are receiving academic instruction in Spanish are making steady progress towards the acquisition of basic skills. Research indicates that when these skills have been well-developed in the first language and children have attained a certain minimum, or "threshold," level of proficiency in the second language, skills learned in the first language will readily transfer to the second (Cummins, 1979). On the basis of these strong Spanish scores, we can expect that these students will eventually be able to transfer their knowledge to similar academic tasks in English successfully.

It is important that the State Department of Education monitor the acquisition of basic skills in Spanish as well as in English, but only one standardized Spanish achievement test, the Comprehensive Test of Basic Skills, is presently available. The CTBS measures achievement in Spanish reading and mathematics, but it does not measure language arts and writing skills. In order to provide more complete assessments of bilingual education participants' academic abilities, the State Department of Education should develop a Spanish version of the Connecticut Mastery Test.

PART B: RESULTS OF ENGLISH ACHIEVEMENT TESTS FOR CONTINUING STUDENTS (GROUP 3)

Highlights: English Reading, Mathematics, and Language Arts Achievement

- English achievement results were generally low for Group 3 students in all subject areas. This finding was not unexpected, since limited English proficiency was the very reason these students were continuing in the program. However, gains in English achievement were reported in all three subject areas and in all three grade clusters.

- Gains in English reading from pretest to posttest were slight, but they were generally in a positive direction at each grade cluster.

- In English mathematics and language arts, students at the junior high and high school levels maintained their relative performance at approximately the same level during the year. However, elementary students produced significantly better than average gains of 5.3 and 5.7 NCEs in English mathematics and language arts.

Background

According to current evaluation guidelines, districts are to test participating bilingual education students in English if they receive academic instruction in English. Since students in Group 3 are continuing in the bilingual education programs precisely because their English skills are

limited, their scores on standardized English achievement tests were predictably low. Therefore, greater emphasis is given to the gains shown by continuing students in English between pre- and posttesting in this section, rather than to the actual scores received.

The results reported in this section should be interpreted with this caveat in mind. Furthermore, the reader should recall that the 35th percentile in English basic skills has been proposed as an appropriate expectation for students at the time of exit from the bilingual education programs. Since scores in this section are for Group 3 continuing students who are not yet ready to exit, Group 3 scores will fall in a range lower than the 35th percentile.

English Reading

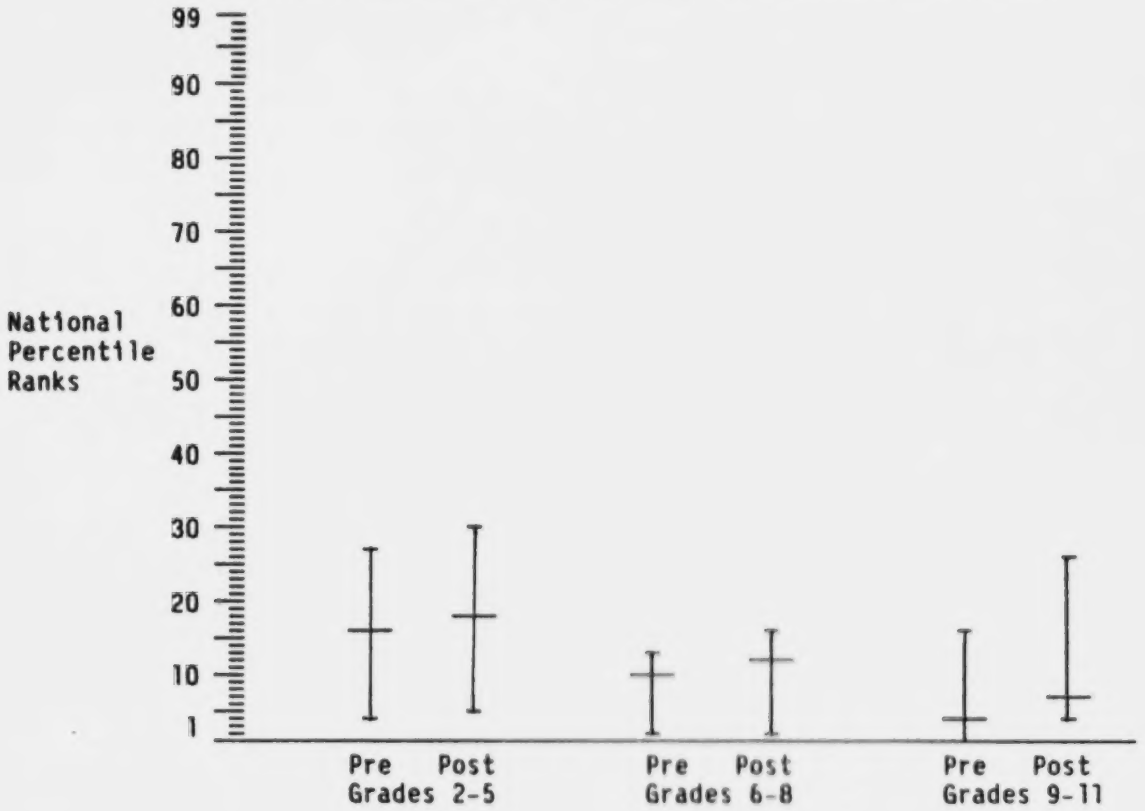
English reading achievement results for Group 3 continuing students are displayed in Appendices X-Z and AA-CC. The difference between the mean NPR attained on the pretests and posttests in English reading was slight and positive at the elementary, middle school, and high school levels. However, at all three levels mean performances on both the pretests and posttests were very low, reflecting the fact that this group of students was at the earliest stages of English skill development.

Consider first the English reading results for Grades 2-5 in Appendix X. On average, elementary students' performance was stable; they attained a pretest NPR of 16 and a posttest NPR of 18, for a gain of 1.1 NCEs. Appendix Y breaks down results in this subject area by grade. Fourth graders inexplicably lost 4.2 NCEs in English reading, while 3rd graders gained 1.2 NCEs and 5th graders gained 2.9 NCEs. Second graders made a significant gain of 6.5 NCEs, moving from a mean NPR of 16 on the pretest to a mean NPR of 24 on the posttest.

Middle school students in Grades 6-8 produced gains similar to those of elementary students in Grades 2-5 (see Appendix Z). Middle school students increased their standing in English reading by 2.8 NCEs, moving from the 10th percentile on the pretest to the 12th on the posttest. Results by grade in Appendix AA reveal that 6th graders made a meaningful gain of 7.0 NCEs and improved their standing from the 10th to the 16th percentile. Seventh graders showed a slight decline of 0.1 NCEs, though their mean NPR remained at 12. Eighth graders gained 1.2 NCEs between testing occasions and ended the year with an average posttest score in English reading at the 8th percentile.

Of the three grade clusters, the mean national percentile rank on the English reading posttest was lowest for high school, as shown in Appendix BB. On average, students in Grades 9-11 scored at the 4th percentile in English reading on the pretest and at the 7th percentile on the posttest, for a gain of 4.7 NCEs. Positive gains were made by students at each grade level, with 9th graders gaining an average of 4.1 NCEs, 10th graders gaining 2.8 NCEs, and 11th graders making a significant gain of 7.3 NCEs.

Mean District Achievement in National Percentile Ranks (NPRs)



Normal Curve Equivalent (NCE) Achievement Gains by Number of Districts

NCE Change	Grades 2-5	Grades 6-8	Grades 9-11
+5 or more NCEs	3	2	4
Zero to 4.9 NCEs	4	4	2
-0.1 NCE or lower	2	2	1

Figure 9
English Reading Achievement Results
for Group 3 - Continuing Students
1985-86

Figure 9 summarizes achievement gains made by each grade cluster in English reading. The graph at the top of the page indicates that average levels of achievement in English reading improved at the elementary, middle school, and high school levels during the year. While mean posttest NPRs were still relatively low, this result is to be expected since Group 3 continuing students are still limited English proficient. English reading results should be regarded as positive since students in each grade cluster improved their relative standing on norm-referenced tests within the year.

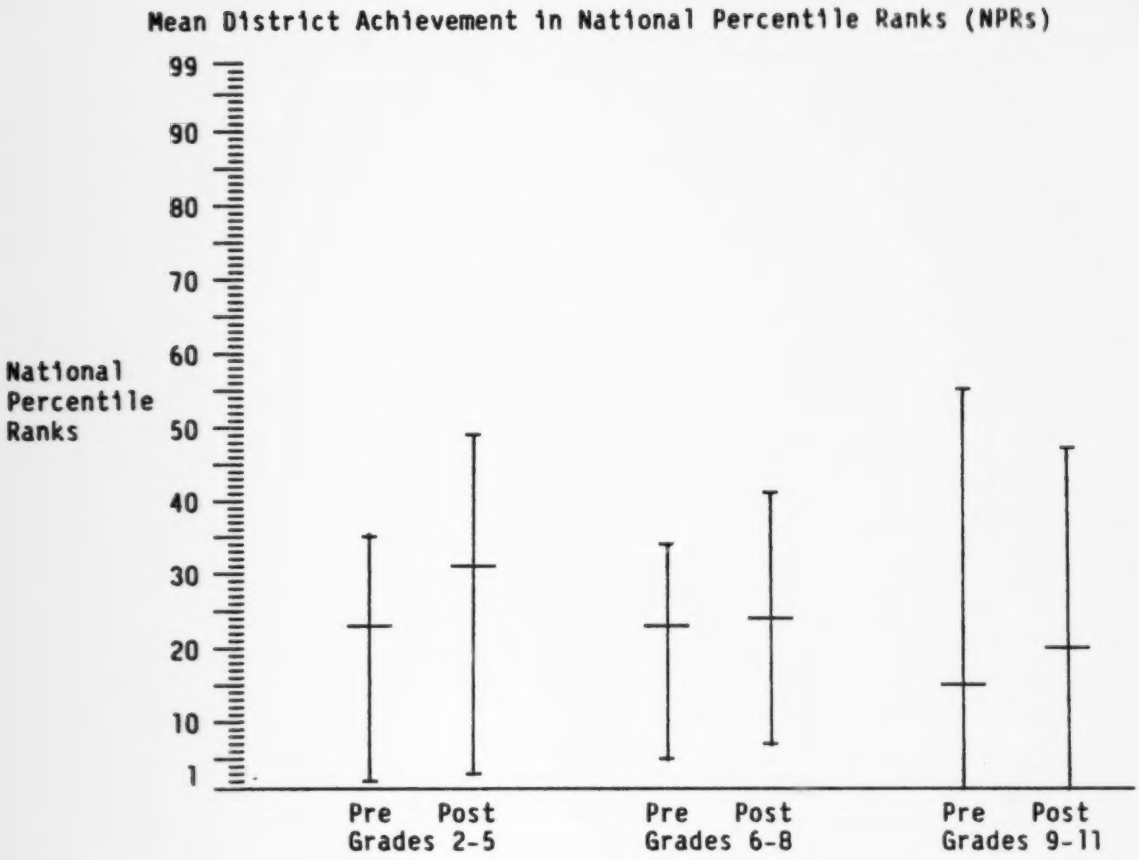
English Mathematics

English mathematics results (presented in Appendices DD-II) are much stronger than Group 3's English reading results, as might be predicted, since ability in mathematics is far less dependent on English proficiency than is reading ability. (The ability to conceptualize and solve word problems in English is the exception to this generalization, of course, as Macnamara (1966) has shown.)

Elementary students' English mathematics results are shown in Appendices DD and EE. On average, students in this grade cluster registered a significant gain of 5.3 NCEs and improved their pretest-to-posttest score from the 23rd to the 31st percentile, nearly reaching the level of English achievement which has been proposed for students exiting the program (the 35th percentile). Individual grade results presented in Appendix EE reveal that significant gains of 11.7, 5.5, and 6.6 NCEs were made by 2nd, 4th, and 5th graders; 3rd graders declined in their relative standing by 1.5 NCEs. Second graders exceeded the proposed level of expectation for students exiting the bilingual education program by scoring at the 44th percentile in English math, and came close to meeting national norms in math for native English speakers.

Sixth graders also made strong gains in English math, but their average gains were pulled down when 7th and 8th graders' scores were aggregated in the intermediate grade cluster (see Appendix FF). When aggregated, middle school students slightly improved their mean English mathematics score from the 23rd to the 24th percentile, for a gain of 0.8 NCEs. Results for individual grades in Appendix GG show a positive gain of 4.6 NCEs for 6th graders, who scored at the 35th percentile on the posttest. Seventh graders dropped from the 25th to the 22nd percentile and lost 2.3 NCE points. Eighth graders made a very slight gain in terms of NCEs, though their mean NPR remained at 14 from pretest to posttest.

As was the case in English reading, high school students ended the year with relatively low mean national percentile ranks in English mathematics. On average, however, change was in a positive direction. Secondary students gained 4.1 NCEs in English mathematics and moved up in relative standing from the 15th to the 20th percentile (see Appendix HH). When the data are disaggregated by grade level in Appendix II, we find that 9th graders maintained a mean NPR of 19 from pretest to posttest, but showed a slight decline in terms of normal curve equivalents due to rounding. Tenth and eleventh graders made significant academic gains of 5.9 and 5.8 NCEs. Tenth graders moved from the 15th to the 23rd percentile during the year, while eleventh graders moved up from the 11th to the 17th percentile.



Normal Curve Equivalent (NCE) Achievement Gains by Number of Districts

NCE Change	Grades 2-5	Grades 6-8	Grades 9-11
+5 or more NCEs	6	3	1
Zero to 4.9 NCEs	1	2	4
-0.1 NCE or lower	2	1	1

Figure 10
English Mathematics Achievement Results
for Group 3 - Continuing Students
1985-86

These data on English mathematics achievement are summarized in Figure 10. As can be seen in the upper graph, mean district performance increased in each grade cluster from the pretest to the posttest. The lower figure on the page shows that at the elementary grades, two districts reported declines in relative performance, one district reported average gains, and six reported significant positive change. Results for the intermediate and secondary grade clusters are similar: in each case five districts reported average or better than average gains in mathematics, while only one district in each case registered a decline in relative standing.

English Language Arts

English language arts results for Group 3 continuing students appear in Appendices JJ-OO. English language arts tends to be the most difficult subject area on standardized achievement tests for limited English proficient students, because test items often require students to display extensive knowledge of English vocabulary and to make semantic inferences and grammatical judgements expected of a native English speaker. Consequently, Group 3 continuing students' scores are lower in English language arts than in English reading or mathematics.

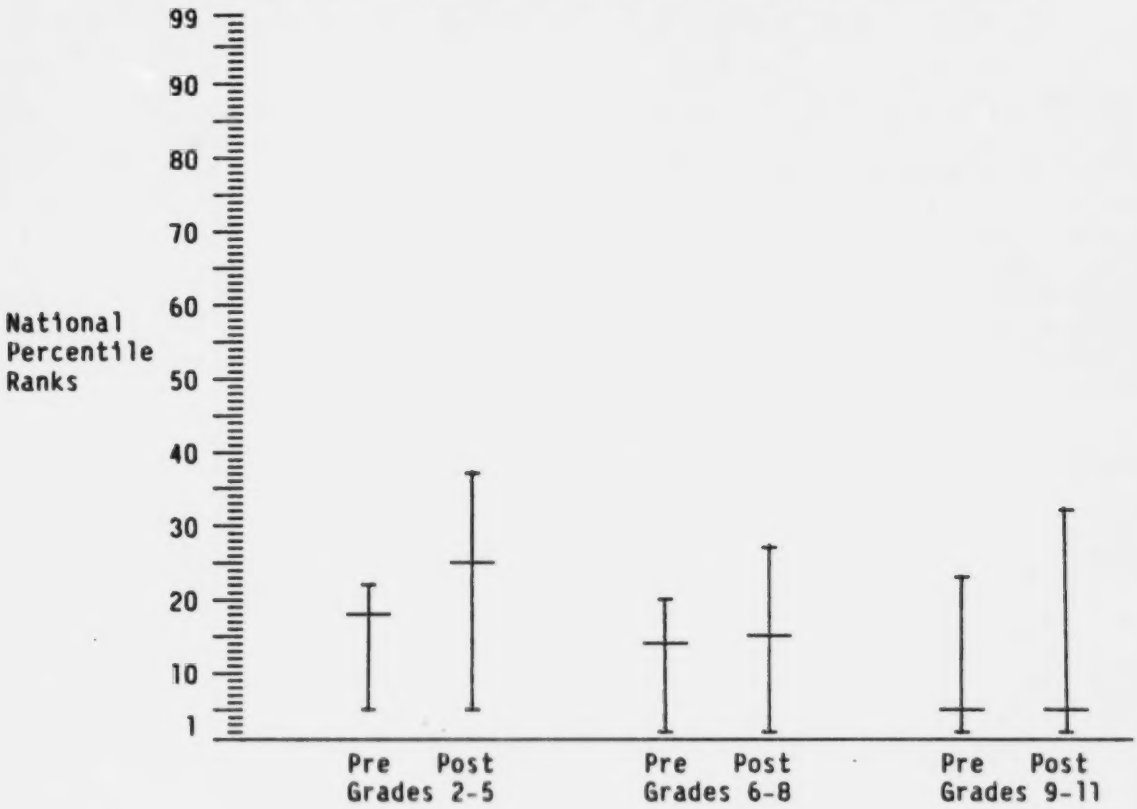
On average, elementary students significantly improved their language arts scores by 5.7 NCEs, moving from the 18th to the 25th percentile (see Appendix JJ). Appendix KK reveals that students improved their scores in each grade, but the gains were strongest in Grades 4 and 5, where students improved their mean performance by 8.1 and 9.0 NCEs.

Turning to Appendix LL, we find that the mean NPR for junior high school students remained basically the same during the year from 14 on the pretest to 15 on the posttest, for a gain of 1.8 NCEs. Individual grade data in Appendix MM show that 6th graders improved their overall performance most, gaining 4.0 NCEs and moving from the 16th to the 21st percentile. Seventh graders' mean NPR remained at 15, though performance varied widely among districts. Eighth graders' mean NPR also remained relatively unchanged between pretesting (mean NPR=9) and posttesting (mean NPR=10).

High school students displayed an NCE change of 0, indicating that they made average progress in English language arts during the year and maintained their relative standing (see Appendix NN). However, their mean national percentile rank remained exceptionally low from pretest to posttest (mean NPR=5). On average, little change was made by secondary students in any grade in this subject area. Appendix OO reveals that mean NPRs on the English language arts pretests and posttests were 7 and 6 for 9th graders, 6 and 6 for 10th graders, and 3 and 4 for 11th graders.

Figure 11 summarizes English language arts results. The upper graph shows that the mean NPR for elementary students increased from pretest to posttest, but the mean NPR and NPR ranges on the pretest and posttest were quite similar for the intermediate and high school grade clusters. At the bottom of the page, the grid indicates that seven districts made average or better than

Mean District Achievement in National Percentile Ranks (NPRs)



Normal Curve Equivalent (NCE) Achievement Gains by Number of Districts

NCE Change	Grades 2-5	Grades 6-8	Grades 9-11
+5 or more NCEs	4	4	1
Zero to 4.9 NCEs	3	0	3
-0.1 NCE or lower	1	3	1

Figure 11
English Language Arts Achievement Results
for Group 3 - Continuing Students
1985-86

average gains at the elementary level, with one district displaying a decline. At the intermediate level, three districts recorded declines, while four made significant gains. At the high school level, most of the districts showed average growth or better during the year, although one registered a decline in relative performance.

Summary of Section IV: Part B - English

As predicted, continuing students attained relatively low scores in English basic skills. Most of these students had participated in the bilingual education programs for a brief amount of time and were at the earliest stages of English skill development. As explained earlier, research findings indicate that several years of exposure in a bilingual education program may be necessary before large gains in achievement begin to appear and students start to "catch up" to their English-speaking classmates. Since the current evaluation design measures only one year's progress at a time, any gains which do appear between pre- and posttesting are small.

What is most important is that changes in performance were generally in a positive direction. As was seen in Figures 9-11, the average district performance improved in every grade cluster and in all three subject areas, with the exception of high school students in English language arts, where students made average progress, but maintained their relative standing at very low levels. In some individual cases, district performance declined from pretest to posttest. Programs should be carefully reviewed at all levels whenever performance regresses in this manner, especially since initial levels of English academic skills were already quite low for continuing students.

SECTION V: EVALUATION RESULTS FOR GROUP 2A - STUDENTS EXITING DUE TO INCREASED PROFICIENCY

Highlights: Language Proficiency, and English Reading, Mathematics, and Language Arts Achievement

Language Proficiency Results

- English language proficiency results were very favorable in Grades K-2. In seven out of eight districts, students exiting the bilingual education programs in this grade cluster scored above national norms.

- Mean levels of performance in English language proficiency tended to decline in progressively higher grades.

Reading Achievement Results

- Of the three subject areas assessed for Group 2A exiting students (reading, mathematics, and language arts), achievement was weakest in English reading.

- While students in the elementary grade cluster exited with reasonably strong scores in English reading, students in the middle school and high school grade clusters performed at levels which were lower than desirable. In the majority of districts, mean NPRs for junior high and high school students were below the first quartile (NPR = 25).

Mathematics Achievement Results

- English achievement results for exiting students were strongest in mathematics.

- In the elementary grades, achievement exceeded expectations. Exiting students scored above the 35th percentile in eight out of eleven districts.

- Students in the junior high school grade cluster met the expected level of achievement by attaining a mean NPR of 35 in English mathematics.

- Exiting high school students' overall performance in English mathematics was not as strong as desirable. Performance varied widely by district at this level, however, and the mean NPRs of exiting students were quite good in some of the districts.

Language Arts Achievement Results

- In the elementary grades, English language arts achievement exceeded expectations. In six out of ten districts, mean NPRs were above 35.

- Average performance in the junior high grades was also reasonably good. Students in the Grade 6-8 cluster scored at the 31st percentile in English language arts.

- High school students' language arts results were weaker than desirable. In over half of the districts, high school students had mean NPRs in the bottom quartile.

Background

In order to exit from a bilingual education program in Connecticut, a student must meet two of the following three state-determined criteria:

(1) the child must score at or above the fiftieth percentile on an English language proficiency test;
(2) the child must receive English academic grades or other periodic indicators of achievement which are at least average; and
(3) a trained interviewer must determine that the child speaks and understands English well enough to participate in an all-English classroom.

Students who met the state criteria for exit at the end of the 1985-86 school year were classified in Group 2A. Since these students were on the verge of entering all-English classrooms, their degree of English proficiency and the level of achievement they had attained in English basic skills at the time of exit were of primary interest. Therefore, Spring 1986 scores on English language proficiency tests and on standardized English achievement tests in reading, mathematics, and language arts were used to assess their level of success in the program.

Language Proficiency

All but one district in Connecticut used the Language Assessment Battery, or LAB, to measure English language proficiency. (The exception was Hartford, which used the LAB in Grades 7-12, but the Language Assessment Scales (LAS) in Grades K-6.) Language proficiency results obtained on the LAB are displayed by grade cluster in Appendix PP and by individual grades in Appendix QQ. On average, scores for exiting students in the early elementary grades were very strong. Appendix PP shows that the average NPR for students in the Grade K-2 cluster was 59; all eight districts attained mean NPRs above 40, with seven of the eight above 50.

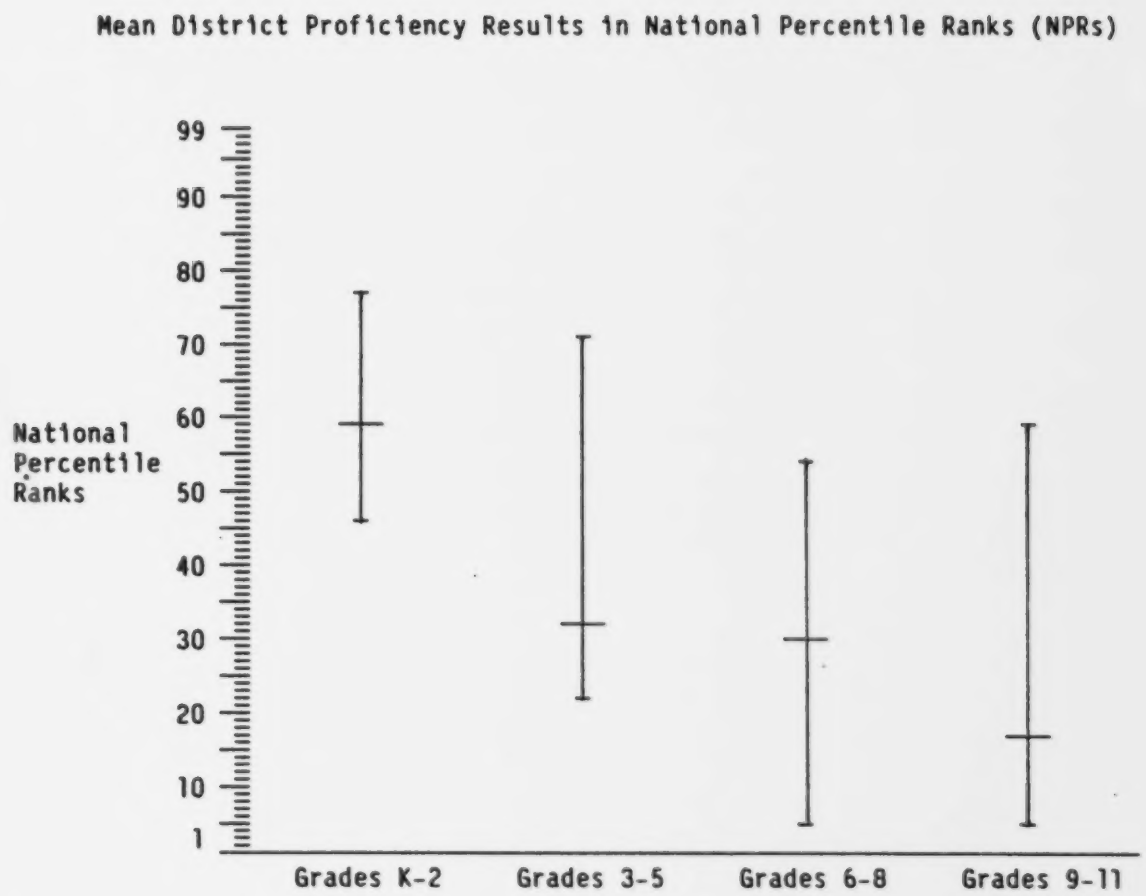


Figure 12
Posttest Language Proficiency Results for
Group 2A - Exiting Students - Increased English Proficiency
1985-86

Language proficiency results were lower in the upper elementary grades and in the junior high. Students in the Grade 3-5 cluster attained a mean NPR of 32; six of the ten districts had mean NPRs above 40, with four above 50. Junior high school students in Grades 6-8 achieved a mean NPR of 30; five districts reported an average NPR above 40, with one above 50.

Levels of language proficiency were lowest for exiting high school students, whose mean NPR was 17. Only two districts reported a mean NPR in the Grade 9-11 cluster which was above 40, and in only one district was the mean NPR above 50. Grade cluster data are summarized in Figure 12.

The test which is currently used to measure language proficiency may be responsible in part for the pattern of declining scores. The extremely wide ranges of performance which appear in each grade cluster in Figure 12 either indicate that the language abilities of exiting students differ radically across districts, or that the test is not providing a true picture of students' language proficiency. Examination of the Language Assessment Battery's scales reveals that it becomes increasingly harder to reach the 50th percentile on this test in progressively higher grades. For example, on the 1976 form of the English LAB, 7th graders must correctly answer 77 out of the 92 items on Level III, or 84%, in order to score at the 50th percentile. Eleventh graders, on the other hand, must correctly answer 85 items, or 92%, in order to score at the 50th percentile on the same test. A task force advising the State Commissioner of Education on bilingual education issues, which is composed of representatives of the bilingual education programs in Connecticut, has already recommended that the Language Assessment Battery be replaced as the standardized language proficiency measure used statewide because of widespread dissatisfaction with the quality of information provided by this test.

English Reading

Group 2A students' posttest achievement results in English reading are grouped by grade cluster in Appendix RR and by individual grade in Appendix SS. Average English reading scores in the elementary grades were relatively strong, based on the 35th percentile in English basic skills, which has been proposed as an appropriate expectation for exiting students. The mean NPR for exiting students in the Grade 2-5 cluster was 30; individual grade data in Appendix SS reveal that the highest NPRs for this group were achieved by 2nd and 3rd graders.

Average performance in English reading was lower than desirable for exiting students in the junior high and high school clusters. The mean NPR in English reading was 25 for Grades 6-8, and 9 for Grades 9-11. The majority of the districts reported mean NPRs in English reading which were below 25. English reading performance for Group 2A students is summarized in Figure 13.

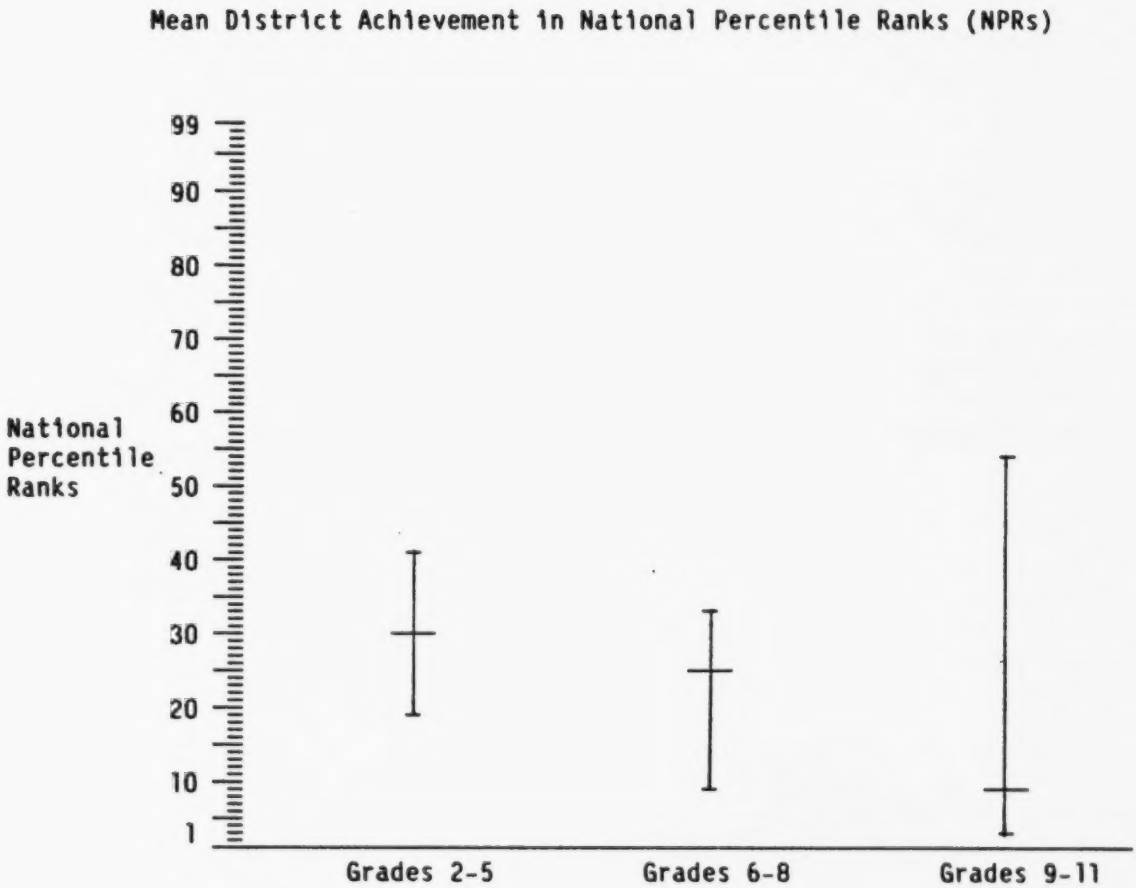


Figure 13
English Reading Posttest Achievement Results
for Group 2A - Exiting Students - Increased English Proficiency
1985-86

English Mathematics

Results in English mathematics were much stronger than in English reading, as shown in Appendices TT and UU. Students in the elementary grade cluster scored above the expected level of achievement in eight out of eleven districts. The mean national percentile rank for the entire group was 42. Exiting students in the junior high cluster also met the desired level of performance in English mathematics, with a mean NPR of 35.

Though high school students' overall performance in English mathematics was much better than in English reading, it was still lower than desirable -- the mean NPR for exiting students in the Grade 9-11 cluster was 22. The reader should note, however, that performance varied widely by district at the high school level; Appendix UU shows that the average NPRs of exiting students in Meriden, New Britain, and Stamford were quite good. Posttest achievement results are summarized by grade cluster in Figure 14.

English Language Arts

Although English language arts is usually the most difficult subtest for limited English proficient students, results for Group 2A were actually better in English language arts than in English reading (see Appendices VV and WW). The mean NPR of 37 attained by students in the Grade 2-5 cluster exceeded expectations: six out of ten districts reported average NPRs at or above 35.

Junior high school results were also reasonably good. The mean NPR for the Grade 6-8 cluster was 31. Performance at the high school level was considerably lower, as was the case in English reading and mathematics. The average NPR achieved by exiting students in the Grade 9-11 cluster was 14. A graphic summary of English language arts performance appears in Figure 15.

Summary of Section V

English language proficiency and basic skills results were very positive for students in the elementary grades. Students in Grades K-2 attained a mean NPR of 59 in English language proficiency, while those in Grades 3-5 scored at the 32nd percentile. Mean NPRs in English reading, mathematics, and language arts were 30, 42, and 37. These results are especially encouraging since the majority of students exiting bilingual education programs in Connecticut (551 out of 902, or 61%) were concentrated in Grades K-5.

Students in the middle school also performed very well in English mathematics and language arts, attaining mean NPRs of 35 and 31. Performance in English language proficiency was at the 32nd percentile. Results were weakest in English reading, where junior high students' mean NPR was 25.

High school students' levels of achievement were lower than desirable in all four areas. Mean NPRs in language proficiency, reading, mathematics, and language arts were 9, 17, 22, and 14. Performance varied rather widely at the high school level, however, and in some districts mean NPRs were reasonably good.

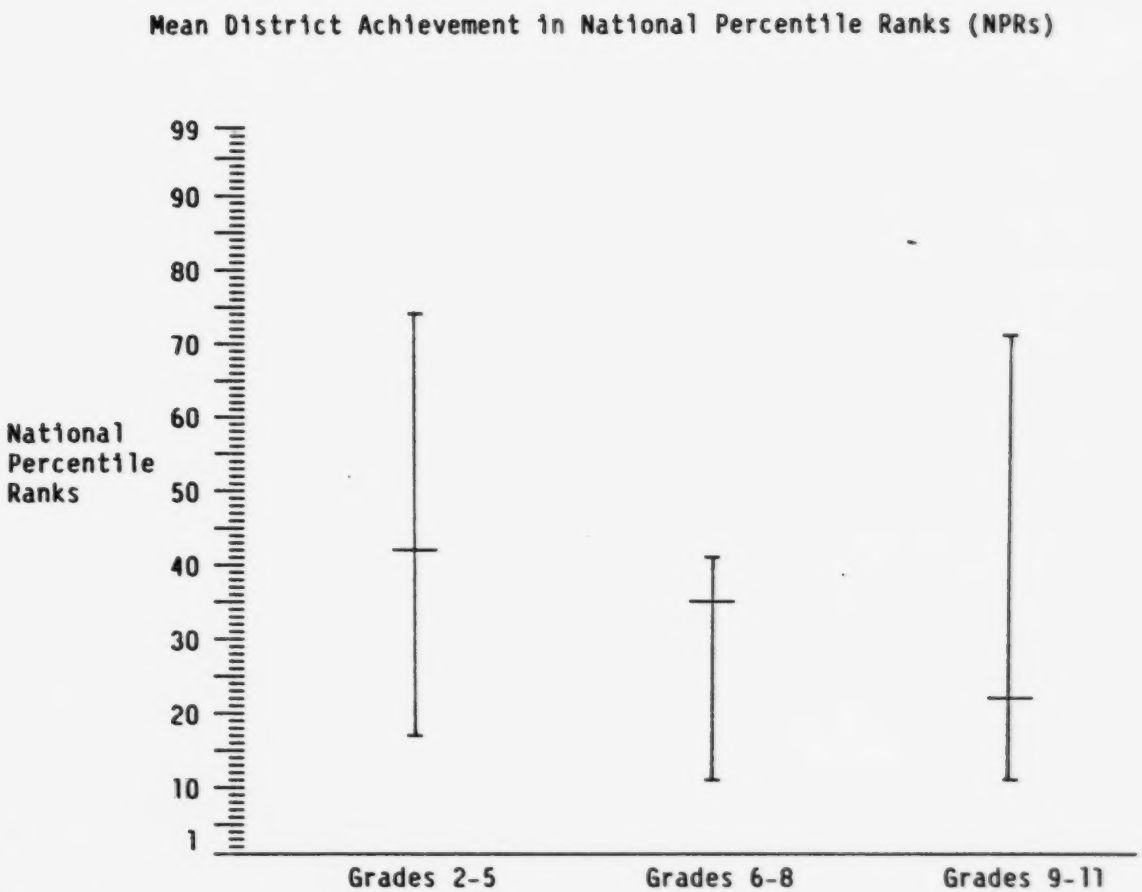


Figure 14
English Mathematics Posttest Achievement Results
for Group 2A - Exiting Students - Increased English Proficiency
1985-86

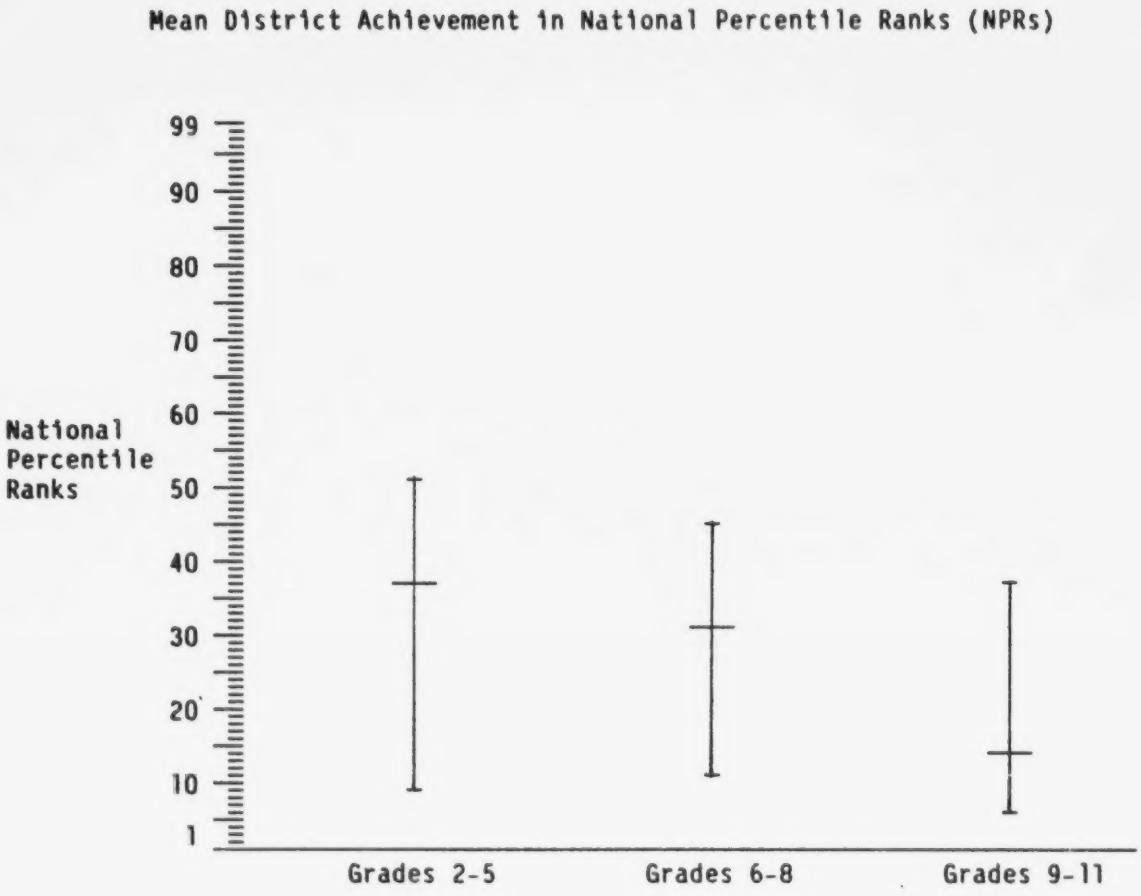


Figure 15
English Language Arts Posttest Achievement Results
for Group 2A - Exiting Students - Increased English Proficiency
1985-86

SECTION VI: CONCLUSIONS AND RECOMMENDATIONS

1. The single most important characteristic of the population of students served in bilingual education programs is that they are extremely mobile. Constant movement between schools, between districts, and between Puerto Rico and the mainland United States is disruptive to both normal academic progress and to second language development, and complicates every aspect of program planning and administration. This population characteristic is not likely to change in the near future, because of high rates of poverty and unemployment in Puerto Rico. Consequently, districts must continue to improve their methods of tracking transient students and develop common core curricula to be used throughout the districts so that students who move from school to school will not miss essential areas of instruction. Curriculum development should be the top training priority of the State Department of Education's Bilingual Education Unit. Training in this area has already expanded -- seven Summer Training Institutes specifically geared to bilingual education teachers and administrators were offered during Summer of 1986 and a similar commitment has been made for Summer of 1987.

2. The state continues to provide a very small portion of the funds required to operate Connecticut's bilingual education programs. During 1985-86 the state contribution of $1.9 million was 5.5% of the total program expenditures, or roughly $167 per pupil. Additional funds are needed for staffing, teacher training, program evaluation, and curriculum development if programs are to operate effectively. The state's Bilingual Education Task Force has recommended a phase-in formula which would allocate $10.42 million to the bilingual education programs; $520,000 would be set aside for State Department of Education training and technical assistance activities, with the remainder allocated to local districts to raise per-pupil expenditures by the state to $900. All twelve bilingual education programs are to be commended for the improvements they have made each year to meet the state's data collection and reporting requirements, despite the limited level of funding provided for this purpose.

3. The extensive reporting requirements related to the annual bilingual education evaluation continue to divert large amounts of program staff time and money from necessary administrative and instructional activities. In order to alleviate some of the data reporting burden, the statewide evaluation of bilingual education programs should be changed to a biennial reporting cycle. Local school districts would still be required to collect data annually on all students, but they would only be required to report results to the state every other year, beginning in 1987-88. This plan would align the reporting cycle for bilingual education with other programs, such as Chapter 1 and EERA. State Department of Education staff would help districts improve their student tracking systems and implement pilot research projects during non-reporting years.

4. The extremely small number of administrators employed to oversee operations in the bilingual education programs demands immediate attention. While the number of students served by the programs increased by 275 (2.5%), and the number of full-time equivalent (FTE) staff members increased by 95.5 (12.6%), the number of administrators remained virtually unchanged since 1984-85 (11.0 full-time equivalent administrators were employed in 1984-85, as opposed to 10.8 in 1985-86). Additional administrators are clearly required to manage a program which serves over 11,000 students, especially in the larger districts, where program participants are enrolled in a number of different school sites.

5. Spanish achievement results for continuing students were strong in both reading and mathematics. These results should not be dismissed lightly; research suggests that skills which are learned well in the first language will successfully transfer to the second, once students have attained a certain threshold level of English proficiency. Programs are to be congratulated for these positive results. Teachers should continue to develop strong levels of academic skills in the native language while students are developing proficiency in English.

6. The State Department of Education should develop a Spanish version of the Connecticut Mastery Test in order to provide more thorough diagnostic information on bilingual education pupils' academic progress. Only one standardized achievement test is currently available in Spanish, and this instrument does not assess language arts or writing. The State Department of Education should begin with the construction of a mathematics subtest for Grades 4, 6, and 8, since parallel item development would be easiest in mathematics, and a writing subtest for the same grades, since no writing assessment instrument is available in Spanish.

7. English achievement results were generally low for students who were continuing in the bilingual education programs. This finding was predictable, since limited proficiency in English was the very reason that these students were scheduled to continue receiving bilingual instruction. In most cases changes in English achievement levels were small, but in a positive direction. In some cases, however, mean performance declined during the year. Programs should carefully examine these negative achievement patterns whenever they occur, whether in English or in the native language. The Connecticut State Department of Education will organize special meetings to assist local staff in analyzing these results.

8. English proficiency and achievement scores were very positive for elementary school students who exited from the bilingual education programs. Students in Grades K-2 exceeded expectations in language proficiency, while those in Grades 2-5 exceeded expectations in both English mathematics and English language arts. These findings are especially encouraging, since nearly two-thirds (61%) of the students exiting Connecticut's bilingual education programs were in Grades K-5.

Scores for exiting middle school students were fairly strong in English mathematics and language arts, but rather weak in English language proficiency and reading. Close to one-fourth of the exiting students (23%) were in Grades 6-8. Scores were much lower than desirable in all subject areas for students exiting at the high school level. These students comprised 16% of the total number of exiting students.

The instrument used to assess student performance in language proficiency may be partly responsible for poor results in the upper grades. A bilingual education task force has already recommended that the Language Assessment Battery be replaced by a different measure of language proficiency because of weaknesses in the current instrument. Low scores in the upper grades also reflect a greater urgency on the part of districts to mainstream older students into English classrooms quickly: 70% of the exiting high school students (101 out of 145) had spent three years or fewer in the bilingual education programs, as opposed to 53% of the exiting elementary students (294 out of 551) and 29% of the exiting middle school students (59 out of 206). Programs at the high school level will require increased attention to ensure that exiting students are sufficiently prepared to handle academic coursework in English once they leave the program.

9. Current state exit criteria stress performance in oral language proficiency more heavily than academic achievement in English -- two of the three state exit criteria require satisfactory performance on a language proficiency test and a structured oral interview. Research has shown that oral language proficiency tests are actually poor predictors of a child's ability to perform instructional tasks in all-English classrooms (Cummins, 1983a, b; Cervantes, 1979); better predictors of success in a mainstream classroom would be measures of a child's ability to perform academic skills in the second language, such as standardized test scores, basal reading levels, and performance on writing samples. Members of the state's Bilingual Education Task Force have already taken action to resolve the inconsistency between current policy and research by recommending changes in the state exit criteria to place a stronger emphasis on English academic skills. Adoption of these new criteria should result in consistently higher levels of performance in English basic skills upon exit. For the time being, districts should use the 35th percentile in English basic skills as a general rule-of-thumb when deciding whether students are ready to exit the program, since performance much lower than this level would indicate that students would have considerable difficulty succeeding in an all-English environment. If exiting students' skills are lower than the 35th percentile, alternative evidence that the student is ready to exit should be documented by program staff.

10. Finally, the bilingual education evaluation design itself should be revised. Student performance on standardized tests is only one measure of program success. Other indicators which are equally valid measures of success are not taken into account in the current design. For example, in each district a number of graduating high school seniors who had participated in the bilingual education programs received scholastic honors, were accepted to college, and won scholarships, often surpassing the native English-speaking students in their schools.

    Success stories were not limited to the high school level, either. Prince (1987) has documented cases of:

    - a second grader enrolled in a bilingual education program who was one of only two students in her school to be accepted into the district's Gifted and Talented Program;

    - a second-grade bilingual education class which won first place in the school science fair;

    - and two second-grade bilingual education classes which won the first-, second-, and third-place prizes in an English arithmetic contest against three all-English classes.

    Other examples of success stories were reported by the bilingual program directors this year. In New Haven, for example, 1985-86 was the first year that bilingual education students competed in the annual districtwide English spelling bee. One of the 4th graders in the bilingual education program beat all of the other students in her school, including the native English speakers, to win first prize and qualify for regional competition. In New Britain, one of the Polish students who graduated from the bilingual education program five years ago now teaches in the Computer Science Department at Central Connecticut State University.

    While the present evaluation design is useful for determining some general trends in student achievement, it is clearly only one method of program assessment and does not address all relevant measures of student performance. Changes in the evaluation design are now underway which will provide supplementary information needed to guide program improvements and which will provide a more complete picture of student performance in bilingual education programs in Connecticut.

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APPENDIX A

Enrollment Figures for the Bilingual Education Programs
Grade by District Summary
1985-86

	Grade														
District	K	1	2	3	4	5	6	7	8	9	10	11	12	Total	Percent
Bridgeport	340	339	316	227	212	167	103	97	88	95	47	62	20	2,113	18%
Danbury								3	9	12	59	19	9	111	1%
Hartford	818	766	611	598	530	465	352	300	278	267	142	123	66	5,316	46%
Meriden	52	43	34	34	9	10	17	17	22	16	15	2	3	274	2%
Naugatuck	10	7	9	7	3	2								38	1%
New Britain	121	114	117	50	39	43	24	18	18	19	22	29	18	632	6%
New Haven	212	223	155	161	103	73	57	47	48	54	50	30	21	1,234	11%
New London	25	25	23	22	26	14	14							149	1%
Norwalk	32	31	36	16	14	12				17	15	19	7	199	2%
Stamford	15	19	28	28	22	16	18	10	16	15	26	23	9	245	2%
Waterbury	56	90	91	88	71	49	57	80	65	59	27	32	27	792	7%
Windham	52	48	48	47	35	27	17	28	14	18	16	13	16	379	3%
Total	1,733	1,705	1,468	1,278	1,064	878	659	600	558	572	419	352	196	11,482	
Percent*	15%	15%	13%	11%	9%	8%	6%	5%	5%	5%	4%	3%	2%		100%

*Percents do not add to 100% due to rounding.

APPENDIX B

Enrollment Figures for the Bilingual Education Programs
Grade Cluster by District Summary
1985-86

	Grades			
District	K-5	6-8	9-12	Total
Bridgeport	1,601	288	224	2,113
Danbury	0	12	99	111
Hartford	3,788	930	598	5,316
Meriden	182	56	36	274
Naugatuck	38	0	0	38
New Britain	484	60	88	632
New Haven	927	152	155	1,234
New London	135	14	0	149
Norwalk	141	0	58	199
Stamford	128	44	73	245
Waterbury	445	202	145	792
Windham	257	59	63	379
Total	8,126	1,817	1,539	11,482
Percent	71%	16%	13%	100%

APPENDIX C

Language Dominance Data for Each District Offering Bilingual Education Programs
1985-86

District	Spanish	Portuguese	Cambodian	Laotian	Vietnamese	Polish	Italian	Haitian Creole	Total
Bridgeport	1,895	77	65	76					2,113
Danbury	31		80						111
Hartford	4,998	88		45	111	27	47		5,316
Meriden	274								274
Naugatuck		38							38
New Britain	587					45			632
New Haven	1,234								1,234
New London	149								149
Norwalk	199								199
Stamford	213							32	245
Waterbury	767	25							792
Windham	379	—	—	—	—	—	—	—	379
Total	10,726	228	145	121	111	72	47	32	11,482
Percent*	93%	2%	1%	1%	1%	1%	1%	1%	100%

*Percents do not add to 100% due to rounding.

APPENDIX D

Estimated Expenditures for the Bilingual Education Programs*
1985-86

District	State Funds	Local Education Agency Funds	Estimate from Other Program Sources
Bridgeport	$399,903	$1,676,627	1,334,642
Danbury	15,973	78,291	0
Hartford	859,657	12,922,800	9,601,285
Meriden	39,452	290,000	254,794
Naugatuck	7,313	20,000	0
New Britain	123,358	775,303	0
New Haven	201,876	677,718	728,599
New London	22,901	169,900	0
Norwalk	39,645	528,471	0
Stamford	39,644	382,629	1,230,911
Waterbury	113,928	901,831	535,892
Windham	49,651	210,583	589,989
Total	$1,913,301	$18,634,153	$14,276,112
Percent	5.5%	53.5%	41.0%

Total 1985-86 Expenditures: $34,823,566

*Unaudited, self-report data

APPENDIX E

Staffing Patterns in Full-Time Equivalents (FTEs)
for the Bilingual Education Programs*
1985-86

District	Administrators	Teachers	Aides	Support Service	Clerical Staff	Other**	Total
Bridgeport	1.00	106.00	47.00	6.00	2.00	3.00	165.00
Danbury	0.10				0.20	2.00	4.40
Hartford	3.50	295.70	74.00	24.00	3.00		400.20
Meriden	0.51	14.00	6.00	1.00	0.38	1.00	22.89
Naugatuck	0.33	1.00			0.50	0.50	2.33
New Britain	0.20	29.50	1.00		0.50		31.20
New Haven	1.00	51.80	10.00	2.00	2.00	4.00	70.80
New London	0.20	8.00	1.00	0.20	0.20		9.60
Norwalk	1.00	17.00			0.50		18.50
Stamford	1.00	13.00	4.50	4.50	1.00		24.00
Waterbury	1.00	40.50	26.00	0.40	2.00	1.00	70.90
Windham	1.00	18.25	11.00	1.00	1.00	1.00	33.25
Total	10.84	596.85	180.50	39.10	13.28	12.50	853.07

*Unaudited, self-report data

**Additional staff members: Bridgeport - Home/School Coordinators; Danbury - Assistant Teachers; Meriden - Research/Evaluation Specialist; Naugatuck - Social Worker; New Haven - Testers; Waterbury - Social Worker; Windham - Community Worker

APPENDIX F

Program Types Offered in Each District
1985-86

Program Type	Bridgeport Grades			Danbury Grades		Hartford Grades			Meriden Grades			Naugatuck Grades	New Britain Grades		
	K-5	6-8	9-12	6-8	9-12	K-5	6-8	9-12	K-5	6-8	9-12	K-5	K-5	6-8	9-12
A. Dominant language and English instruction-one teacher-self-contained classroom	X					X	X	X	X				X	X	
B. Dominant language instruction-classroom teacher; English instruction-resource teacher						X	X	X							
C. English instruction-classroom teacher; dominant language instruction-resource teacher												X	X		
D. Dominant language and English instruction-two teachers-two classrooms	X	X			X				X	X	X		X		
E. Dominant language and English instruction-departmentalized setting		X	X		X	X	X	X						X	X
F. Dominant language and English instruction-resource basis	X	X	X		X	X	X						X	X	
G. Dominant language and English instruction-departmentalized and resource basis				X	X										

APPENDIX F (cont'd)

Program Types Offered in Each District
1985-86

Program Type	New Haven Grades			New London Grades		Norwalk Grades		Stamford Grades			Waterbury Grades			Windham Grades		
	K-5	6-8	9-12	K-5	6-8	K-5	9-12	K-5	6-8	9-12	K-5	6-8	9-12	K-5	6-8	9-12
A. Dominant language and English instruction-one teacher-self-contained classroom	X			X		X		X	X		X			X		
B. Dominant language instruction-classroom teacher; English instruction-resource teacher																
C. English instruction-classroom teacher; dominant language instruction-resource teacher											X					
D. Dominant language and English instruction-two teachers-two classrooms	X			X	X	X	X				X			X		
E. Dominant language and English instruction-departmentalized setting	X	X	X				X	X	X			X	X		X	X
F. Dominant language and English instruction-resource basis	X															
G. Dominant language and English instruction-departmentalized and resource basis																

APPENDIX G

Daily Dominant Language Instruction Offered Statewide
1985-86

Percent of Group 2A - Exiting Students - Increased English Proficiency
Receiving Daily Dominant Language Instruction

Grade	Daily Amount of Dominant Language Instruction				Total Number of Students*
	1 hr.	1+ - 2 hrs.	2+ - 3 hrs.	3+ hrs.	
K-2	18%	21%	55%	6%	194
3-5	8%	11%	61%	19%	357
6-8	41%	14%	31%	14%	190
9-11	29%	30%	41%	0%	138
Total	21%	17%	50%	12%	879

Percent of Group 3 - Continuing Students Receiving
Daily Dominant Language Instruction

Grade	Daily Amount of Dominant Language Instruction				Total Number of Students*
	1 hr.	1+ - 2 hrs.	2+ - 3 hrs.	3+ hrs.	
K-2	7%	26%	34%	32%	3,844
3-5	8%	7%	37%	48%	2,199
6-8	15%	13%	39%	33%	1,089
9-11	16%	24%	56%	4%	736
Total	9%	19%	38%	34%	7,868

*Tabled percentages indicate the percent of students in that category. Since daily dominant language instruction data were not available for all students, the totals do not reflect the entire Group 2A and Group 3 populations.

APPENDIX H

Number of Students Enrolled in Each Evaluation Group
1985-86

	Evaluation Group				
	1	2A	2B	3	
District	Mobile or Transient Students	Exiting Students-Increased English Proficiency	Exiting Students-Reasons Other Than English Proficiency	Continuing Students	Total
Bridgeport	198	277	143	1,483	2,101
Danbury	11	18	24	56	109
Hartford	677	284	237	3,912	5,110
Meriden	35	43	21	175	274
Naugatuck	0	6	5	26	37
New Britain	57	58	52	456	623
New Haven	283	79	77	752	1,191
New London	21	23	23	76	143
Norwalk	27	23	36	113	199
Stamford	27	28	20	156	231
Waterbury	169	48	54	484	755
Windham	57	15	53	244	369
Total	1,562	902	745	7,933	11,142*
Percent of Total	14%	8%	7%	71%	100%

*Total does not include 340 students classified as special education - handicapped exclude. These students were among the 11,482 students served by the bilingual education programs in 1985-86, but they were not assigned to an evaluation group because of the severity of their handicap.

APPENDIX I

Length of Enrollment in the Bilingual
Education Programs Across All Districts for
Group 2A - Exiting Students - Increased English Proficiency
1985-86

Years in Program

Grade	1	2	3	4	5	6	7	8	Total
K	16	2							18
1	5	22	3						30
2	17	20	85	18	6				146
3	13	17	26	74	5	1			136
4	11	13	20	37	38	9	2		130
5	5	8	11	16	31	18	1	1	91
6	6	7	10	5	16	11	18	2	75
7	5	6	5	4	8	4	5	6	43
8	5	11	4	12	11	17	15	13	88
9	5	8	10	5	3	4	1	1	37
10	13	16	3	5	5	5	1		48
11	17	9	20	8	3	3			60
Total	118	139	197	184	126	72	43	23	902
Percent	13%	15%	22%	20%	14%	8%	5%	3%	100%

APPENDIX J

Length of Enrollment in the Bilingual Education Programs Across All Districts for Group 3 - Continuing Students 1985-86

Years in Program

Grade	1	2	3	4	5	6	7	8	Total
K	1,294	148	1						1,443
1	313	751	271	8					1,343
2	229	168	503	147	11				1,058
3	190	110	105	322	139	16	3		885
4	184	114	61	74	185	94	11	1	724
5	153	85	71	57	62	105	49	8	590
6	121	73	51	26	33	40	57	10	411
7	141	71	43	24	18	45	32	17	391
8	130	84	33	19	14	17	16	16	329
9	177	65	40	21	16	8	3	2	332
10	134	66	23	9	7	3	2		244
11	84	52	25	12	5	2	1		181
Total	3,150	1,787	1,227	719	490	330	174	54	7,931
Percent	40%	23%	15%	9%	6%	4%	2%	1%	100%

APPENDIX K

Summary of Interpretation of Test Data

The following is a summary of the score formats used for the pre and posttest data for Group 3 - Continuing Students. An example of the tabular information and an accompanying interpretation has been provided below:

Table K1
Spanish Reading Pretest and Posttest Achievement Results
for Group 3 - Continuing Students in Grades 2-5

		Spanish Reading Achievement				
		Mean NPR		Mean NCE		NCE
District	N	Pretest	Posttest	Pretest	Posttest	Change
Town X	350	52	40	51.0	44.6	-6.4
Town Y	250	34	47	41.1	48.2	7.1

In Town X, there were 350 Group 3 students in grades 2-5 with matched Spanish reading pretest and posttest achievement results. On the pretest, the mean national percentile rank for this group of students was 52. Percentile ranks, which range from 1 to 99 with the average for students in the same grade being 50, indicate the percent of scores in a norm group that fall below a given score. For example, on the pretest, this group of students scored higher than 52% of the students in the norm group. Their relative standing was recorded as a mean NPR of 40 on the posttest.

Since percentile ranks are not composed of equal measurement units, it is not possible to compute the change in the status of students from the pre to posttest. Therefore, a second type of score has been introduced which shares several characteristics of percentile ranks (range 1 - 99; average score - 50), but has the additional advantage of being based on equal measurement units which permits mathematical procedures such as determining average scores or pre to posttest differences. Conversion tables are used to derive a normal curve equivalent (NCE) from a national percentile rank (NPR). Using these tables, the corresponding NCEs can be derived for the pretest and posttest NPRs and then the difference can be computed. The difference between the pretest and posttest NCE can be interpreted as evidence of program impact. A zero NCE change means that students have maintained their relative standing from pre to posttest and thus have exhibited average growth in achievement. A positive NCE change indicates academic growth due to program intervention, while a negative NCE indicates a loss in the relative performance level over time. Generally, a change of greater than 5 NCE points is necessary to be considered meaningful.

Continuing with the Town X entry, it can be seen that the NCE decreased from 51.0 to 44.6 from the pre to posttest, resulting in a -6.4 NCE change. This indicates a decline in performance over the period assessed.

Table K1 indicates that the Spanish reading pretest mean NPR score for the 250 students in Town Y was somewhat lower than Town X's. The posttest mean for Town Y NPR was 47. The pre and posttest mean NCEs reflect the positive growth of the Spanish reading scores, resulting in a NCE change of 7.1.

APPENDIX L

Spanish Reading Pretest and Posttest Achievement Results for Group 3
Continuing Students in Grade 2-5 Cluster
1985-86

Spanish Reading Achievement

District	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	312	47	44	48.6	46.6	-2.0
Hartford	1,140	53	51	51.7	50.6	-1.1
Meriden	18	42	46	45.9	47.7	1.9
New Haven	197	34	34	41.2	41.2	0.0
New London	36	37	42	42.8	45.6	2.8
Norwalk	31	37	51	42.8	50.5	7.7
Stamford	57	52	66	50.9	58.6	7.7
Waterbury	160	38	42	43.5	45.9	2.4
Windham	61	29	30	38.3	38.7	0.4
Total*	2,012	48	47	48.8	48.4	-0.3

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX M

Spanish Reading Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 2-5
Grade by District Summary
1985-86

Spanish Reading Achievement

	2nd grade						3rd grade						4th grade						5th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	140	60	45	55.3	47.4	-7.9	73	37	41	43.0	45.2	2.2	56	32	45	40.1	47.4	7.3	43	45	41	47.4	45.2	-2.2
Hartford	415	54	59	52.1	54.8	2.7	366	57	48	53.7	48.9	-4.8	226	47	52	48.4	51.1	2.7	133	51	34	50.5	41.3	-9.2
Meriden	13	39	43	44.1	46.3	2.2	--	--	--	--	--	--	4	33	38	40.7	43.6	2.9	1	97	94	89.6	82.7	-6.9
New Haven	68	15	24	28.2	35.1	6.9	65	50	40	50.0	44.7	-5.3	35	43	43	46.3	46.3	0.0	29	42	34	45.7	41.3	-4.4
New London	12	16	34	29.1	41.3	12.2	9	70	62	61.0	56.4	-4.6	7	35	39	41.9	44.1	2.2	8	38	34	43.6	41.3	-2.3
Norwalk	15	49	58	49.5	54.3	4.8	6	11	40	24.2	44.7	20.5	3	47	51	48.4	50.5	2.1	7	35	45	41.9	47.4	5.5
Stamford	17	63	83	57.0	70.1	13.1	11	41	79	45.2	67.0	21.8	17	54	48	52.1	48.9	-3.2	12	42	47	45.7	48.4	2.7
Waterbury	55	35	35	41.9	41.9	0.0	44	38	53	43.6	51.6	8.0	35	39	40	44.1	44.7	0.6	26	42	43	45.7	46.3	0.6
Windham	24	27	25	37.1	35.8	-1.3	11	27	30	37.1	39.0	1.9	13	31	32	39.6	40.1	0.5	13	32	36	40.1	42.4	2.3
Total*	759	48	50	48.9	50.1	1.2	585	51	47	50.5	48.4	-2.1	396	43	48	46.3	48.9	2.6	272	46	37	48.1	43.1	-5.0

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX N

Spanish Reading Pretest and Posttest Achievement Results for Group 3
Continuing Students in Grade 6-8 Cluster
1985-86

Spanish Reading Achievement

District	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	59	44	45	46.9	47.3	0.4
Hartford	187	39	45	44.4	47.2	2.8
Meriden	18	20	34	32.0	41.4	9.4
New Haven	51	48	51	49.0	50.7	1.7
New London	3	37	42	43.0	45.7	2.7
Stamford	19	40	38	44.8	43.4	-1.4
Waterbury	66	37	45	43.1	47.1	4.0
Windham	17	24	31	35.1	39.4	4.3
Total*	420	39	44	44.2	46.9	2.7

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX O

Spanish Reading Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 6 8 Grade by District Summary
1985-86

Spanish Reading Achievement

	6th grade						7th grade						8th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	29	49	42	49.5	45.7	-3.8	15	37	48	43.0	48.9	5.9	15	42	48	45.7	48.9	3.2
Hartford	85	41	43	45.2	46.3	1.1	56	36	41	42.4	45.2	2.8	46	41	52	45.2	51.1	5.9
Meriden	9	17	32	29.9	40.1	10.2	3	39	46	44.1	47.9	3.8	6	16	32	29.1	40.1	11.0
New Haven	16	39	42	44.1	45.7	1.6	15	42	55	45.7	52.6	6.9	20	60	56	55.3	53.2	-2.1
New London	3	37	42	43.0	45.7	2.7	--	--	--	--	--	--	--	--	--	--	--	--
Stamford	7	37	30	43.0	39.0	-4.0	6	60	52	55.3	51.1	-4.2	6	26	33	36.4	40.7	4.3
Waterbury	22	39	38	44.1	43.6	-0.5	26	29	48	38.3	48.9	10.6	18	48	48	48.9	48.9	0.0
Windham	4	27	37	37.1	43.0	5.9	6	20	31	32.3	39.6	7.3	7	26	27	36.4	37.1	0.7
Total*	175	40	41	44.6	45.1	0.5	127	36	45	42.2	47.3	5.2	118	42	48	45.8	48.9	3.2

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX P

Spanish Reading Pretest and Posttest Achievement Results for Group 3
Continuing Students in Grade 9-11 Cluster
1985-86

Spanish Reading Achievement

District	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	12	38	43	43.6	46.3	2.7
Danbury	10	23	38	34.7	43.7	9.0
Meriden	20	43	44	46.5	46.7	0.2
New Haven	25	44	51	46.9	50.3	3.4
Norwalk	22	48	75	48.8	64.4	15.5
Stamford	18	59	55	54.7	52.9	-1.8
Waterbury	27	55	56	52.9	52.9	0.0
Windham	19	45	57	47.5	53.7	6.1
Total*	153	46	54	48.1	52.3	4.2

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX Q

Spanish Reading Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 9-11
Grade by District Summary
1985-86

Spanish Reading Achievement

	9th grade						10th grade						11th grade					
		Mean NPR		Mean NCE				Mean NPR		Mean NCE				Mean NPR		Mean NCE		
District	N	Pre	Post	Pre	Post	NCE Change	N	Pre	Post	Pre	Post	NCE Change	N	Pre	Post	Pre	Post	NCE Change
Bridgeport	12	38	43	43.6	46.3	2.7	--	--	--	--	--	--	--	--	--	--	--	--
Danbury	--	--	--	--	--	--	7	13	30	26.3	39.0	12.7	3	58	59	54.3	54.8	0.5
Meriden	9	42	37	45.7	43.0	-2.7	10	45	49	47.4	49.5	2.1	1	40	52	44.7	51.1	6.4
New Haven	14	46	46	47.9	47.9	0.0	6	46	59	47.9	54.8	6.9	5	37	53	43.0	51.6	8.6
Norwalk	7	40	59	44.7	54.8	10.1	8	51	79	50.5	67.0	16.5	7	52	84	51.1	70.9	19.8
Stamford	7	49	53	49.5	51.6	2.1	9	64	58	57.6	54.3	-3.3	2	68	52	59.9	51.1	-8.8
Waterbury	12	49	46	49.5	47.9	-1.6	4	72	73	62.3	62.9	0.6	11	56	59	53.2	54.8	1.6
Windham	6	42	53	45.7	51.6	5.9	7	45	53	47.4	51.6	4.2	6	49	65	49.5	58.1	8.6
Total*	67	44	47	46.8	48.4	1.6	51	46	57	48.0	53.6	5.6	35	52	64	50.9	57.8	6.9

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX R

Spanish Mathematics Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grade 2-5 Cluster
1985-86

Spanish Mathematics Achievement

District	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	305	43	34	46.2	41.5	-4.8
Hartford	1,147	50	53	50.0	51.4	1.4
Meriden	18	26	70	36.2	61.0	24.9
New Haven	197	28	33	37.6	40.7	3.2
New London	36	31	46	39.5	48.1	8.5
Norwalk	23	33	38	41.0	43.7	2.7
Stamford	57	45	62	47.4	56.4	9.1
Waterbury	160	27	39	36.9	44.0	7.1
Windham	61	21	29	33.1	38.3	5.2
Total*	2,004	43	46	46.2	47.9	1.8

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX S

Spanish Mathematics Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 2-5
Grade by District Summary
1985-86

Spanish Mathematics Achievement

	2nd grade						3rd grade						4th grade						5th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	137	62	38	56.4	43.6	-12.8	72	36	33	42.4	40.7	-1.7	55	20	28	32.3	37.7	5.4	41	28	33	37.7	40.7	3.0
Hartford	408	45	64	47.4	57.6	10.2	362	61	49	55.9	49.5	-6.4	222	45	47	47.4	48.4	1.0	155	44	38	46.8	43.6	-3.2
Meriden	13	19	73	31.5	62.9	31.4	--	--	--	--	--	--	4	41	47	45.2	48.4	3.2	1	69	96	60.4	86.9	26.5
New Haven	68	6	22	17.3	33.7	16.4	65	60	35	55.3	41.9	-13.4	35	25	43	35.8	46.3	10.5	29	45	46	47.4	47.9	0.5
New London	12	37	57	43.0	53.7	10.7	9	20	43	32.3	46.3	14.0	7	42	42	45.7	45.7	0.0	8	27	38	37.1	43.6	6.5
Norwalk	7	37	40	43.0	44.7	1.7	6	26	24	36.4	35.1	-1.3	3	36	43	42.4	46.3	3.9	7	36	48	42.4	48.9	6.5
Stamford	17	54	89	52.1	75.8	23.7	11	58	68	54.3	59.9	5.6	17	27	27	37.1	37.1	0.0	12	48	56	48.9	53.2	4.3
Waterbury	55	34	36	41.3	42.4	1.1	44	20	46	32.3	47.9	15.6	35	22	31	33.7	39.6	5.9	26	31	41	39.6	46.8	7.2
Windham	24	15	36	28.2	42.4	14.2	11	25	23	35.8	34.4	-1.4	13	25	20	35.8	32.3	-3.5	13	27	32	37.1	40.1	3.0
Total*	741	41	53	44.9	51.5	6.6	580	53	45	51.4	47.1	-4.2	391	35	40	42.1	44.8	2.7	292	39	40	44.3	44.4	0.1

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX T

Spanish Mathematics Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grade 6-8 Cluster
1985-86

Spanish Mathematics Achievement

District	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	58	33	24	40.9	34.9	-5.9
Hartford	198	35	33	42.0	40.9	-1.1
Meriden	18	19	46	31.4	47.7	16.3
New Haven	51	35	37	41.7	43.1	1.4
New London	3	16	40	29.1	44.7	15.6
Stamford	17	21	28	32.9	37.5	4.6
Waterbury	66	15	21	28.0	32.9	4.8
Windham	16	15	15	28.1	27.8	-0.3
Total*	427	29	30	38.2	38.8	0.6

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX U

Spanish Mathematics Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 6 8 Grade by District Summary
1985-86

Spanish Mathematics Achievement

	6th grade						7th grade						8th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	28	44	37	46.8	43.0	-3.8	15	29	23	38.3	34.4	-3.9	15	20	8	32.3	20.4	-11.9
Hartford	96	44	47	46.8	48.4	1.6	56	34	25	41.3	35.8	-5.5	46	21	19	33.0	31.5	-1.5
Meriden	9	15	50	28.2	50.0	21.8	3	56	63	53.2	57.0	3.8	6	12	31	25.3	39.6	14.3
New Haven	16	33	37	40.7	43.0	2.3	15	43	40	46.3	44.7	-1.6	20	30	35	39.0	41.9	2.9
New London	3	16	40	29.1	44.7	15.6	--	--	--	--	--	--	--	--	--	--	--	--
Stamford	6	24	36	35.1	42.4	7.3	6	41	35	45.2	41.9	-3.3	5	5	13	15.4	26.3	10.9
Waterbury	22	16	23	29.1	34.4	5.3	26	11	16	24.2	29.1	4.9	18	20	26	32.3	36.4	4.1
Windham	3	21	16	33.0	29.1	-3.9	6	19	25	31.5	35.8	4.3	7	10	8	23.0	20.4	-2.6
Total*	183	36	40	42.3	44.9	2.6	127	29	25	38.0	36.1	-1.9	117	20	20	32.1	32.1	0.1

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX V

Spanish Mathematics Pretest and Posttest Achievement Results for Group 3
Continuing Students in Grade 9-11 Cluster
1985-86

Spanish Mathematics Achievement

District	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	15	17	25	29.9	35.8	5.9
Danbury	10	7	26	19.2	36.2	17.0
Meriden	20	43	49	46.4	49.5	3.1
New Haven	25	27	40	37.4	44.7	7.3
Stamford	18	29	44	38.6	46.9	8.3
Waterbury	12	22	35	33.7	41.9	8.2
Windham	19	15	38	28.6	43.4	14.8
Total*	119	24	38	34.8	43.5	8.7

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX W

Spanish Mathematics Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 9-11
Grade by District Summary
1985-86

Spanish Mathematics Achievement

	9th grade						10th grade						11th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	15	17	25	29.9	35.8	5.9	--	--	--	--	--	--	--	--	--	--	--	--
Danbury	--	--	--	--	--	--	7	3	16	10.4	29.1	18.7	3	31	55	39.6	52.6	13.0
Meriden	9	37	39	43.0	44.1	1.1	10	49	58	49.5	54.3	4.8	1	42	49	45.7	49.5	3.8
New Haven	14	26	35	36.4	41.9	5.5	6	48	55	48.9	52.6	3.7	5	13	37	26.3	43.0	16.7
Stamford	7	25	44	35.8	46.8	11.0	9	32	44	40.1	46.8	6.7	2	35	46	41.9	47.9	6.0
Waterbury	12	22	35	33.7	41.9	8.2	--	--	--	--	--	--	--	--	--	--	--	--
Windham	6	14	31	27.2	39.6	12.4	7	12	39	25.3	44.1	18.8	6	22	43	33.7	46.3	12.6
Total*	63	23	34	34.3	41.1	6.7	39	25	42	35.9	46.0	10.1	17	23	44	34.2	46.8	12.6

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX X

English Reading Pretest and Posttest Achievement Results for Group 3
Continuing Students in Grade 2-5 Cluster
1985-86

English Reading Achievement

District	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	74	27	17	36.8	30.0	-6.8
Hartford	226	23	25	34.6	35.6	0.9
Naugatuck	10	12	5	24.8	15.1	-9.7
New Britain	105	11	12	24.5	25.5	0.9
New Haven	32	9	11	21.9	23.7	1.8
New London	26	7	10	18.4	23.2	4.8
Norwalk	17	8	12	20.1	25.7	5.6
Stamford	47	18	30	30.5	39.1	8.6
Windham	30	4	8	12.5	20.7	8.2
Total*	567	16	18	29.5	30.6	1.1

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX Y

English Reading Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 2-5
Grade by District Summary
1985-86

English Reading Achievement

District	2nd grade						3rd grade						4th grade						5th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	--	--	--	--	--	--	29	28	14	37.7	27.2	-10.5	23	42	24	45.7	35.1	-10.6	22	13	15	26.3	28.2	1.9
Hartford	5	62	51	56.4	50.5	-5.9	37	34	35	41.3	41.9	0.6	84	24	25	35.1	35.8	0.7	100	18	20	30.7	32.3	1.6
Naugatuck	4	10	3	23.0	10.4	-12.6	5	11	6	24.2	17.3	-6.9	1	24	10	35.1	23.0	-12.1	--	--	--	--	--	--
New Britain	42	17	28	29.9	37.7	7.8	23	8	13	20.4	26.3	5.9	23	10	1	23.0	1.0	-22.0	17	7	14	18.9	27.2	8.3
New Haven	--	--	--	--	--	--	10	11	12	24.2	25.3	1.1	6	13	10	26.3	23.0	-3.3	16	7	10	18.9	23.0	4.1
New London	10	7	9	18.9	21.8	2.9	8	7	13	18.9	26.3	7.4	--	--	--	--	--	--	8	6	9	17.3	21.8	4.5
Norwalk	9	11	19	24.2	31.5	7.3	5	3	7	10.4	18.9	8.5	1	13	2	26.3	6.7	-19.6	2	10	13	23.0	26.3	3.3
Stamford	18	16	37	29.1	43.0	13.9	9	11	25	24.2	35.8	11.6	11	14	16	27.2	29.1	1.9	9	38	44	43.6	46.8	3.2
Windham	5	10	13	23.0	26.3	3.3	7	2	12	6.7	25.3	18.6	10	4	7	13.1	18.9	5.8	8	3	5	10.4	15.4	5.0
Total*	93	16	24	28.8	35.3	6.5	133	17	18	29.5	30.7	1.2	159	20	15	32.6	28.4	-4.2	182	14	17	27.1	30.0	2.9

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*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX Z

English Reading Pretest and Posttest Achievement Results for Group 3
Continuing Students in Grade 6-8 Cluster
1985-86

English Reading Achievement

District	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	14	6	11	16.5	24.3	7.8
Hartford	228	13	16	26.0	29.2	3.2
New Britain	27	2	2	8.0	6.6	-1.4
New Haven	11	7	14	18.4	27.2	8.8
New London	2	5	5	15.4	15.4	0.0
Stamford	8	9	8	21.8	20.8	-1.1
Waterbury	38	8	8	19.8	20.8	1.0
Windham	10	5	6	14.3	17.2	2.9
Total*	338	10	12	22.7	25.5	2.8

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX AA

English Reading Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 6 8
Grade by District Summary
1985-86

English Reading Achievement

	6th grade						7th grade						8th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	6	7	10	18.9	23.0	4.1	3	9	12	21.8	25.3	3.5	5	3	12	10.4	25.3	14.9
Hartford	83	12	24	25.3	35.1	9.8	90	16	15	29.1	28.2	-0.9	55	9	9	21.8	21.8	0.0
New Britain	10	3	3	10.4	10.4	0.0	10	3	2	10.4	6.7	-3.7	7	1	1	1.0	1.0	0.0
New Haven	2	7	7	18.9	18.9	0.0	6	6	16	17.3	29.1	11.8	3	8	16	20.4	29.1	8.7
New London	2	5	5	15.4	15.4	0.0	--	--	--	--	--	--	--	--	--	--	--	--
Stamford	4	6	6	17.3	17.3	0.0	4	13	11	26.3	24.2	-2.1	--	--	--	--	--	--
Waterbury	17	7	9	18.9	21.8	2.9	15	9	9	21.8	21.8	0.0	6	6	5	17.3	15.4	-1.9
Windham	2	14	11	27.2	24.2	-3.0	6	3	5	10.4	15.4	5.0	2	4	5	13.1	15.4	2.3
Total*	126	10	16	22.5	29.5	7.0	134	12	12	25.3	25.2	-0.1	78	7	8	18.6	19.8	1.2

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX BB

English Reading Pretest and Posttest Achievement Results for Group 3
Continuing Students in Grade 9-11 Cluster
1985-86

English Reading Achievement

District	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	2	15	26	28.2	36.4	8.2
Hartford	34	5	4	15.9	12.9	-3.0
New Britain	37	3	5	9.4	14.6	5.2
New Haven	3	1	5	1.0	15.4	14.4
Norwalk	5	4	6	14.1	17.1	3.0
Stamford	28	4	13	12.1	25.9	13.8
Waterbury	18	8	10	20.2	23.1	3.0
Total*	127	4	7	13.5	18.3	4.7

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX CC

English Reading Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 9-11
Grade by District Summary
1985-86

English Reading Achievement

	9th grade						10th grade						11th grade					
		Mean NPR		Mean NCE				Mean NPR		Mean NCE				Mean NPR		Mean NCE		
District	N	Pre	Post	Pre	Post	NCE Change	N	Pre	Post	Pre	Post	NCE Change	N	Pre	Post	Pre	Post	NCE Change
Bridgeport	--	--	--	--	--	--	--	--	--	--	--	--	2	15	26	28.2	36.4	8.2
Hartford	9	15	5	28.2	15.4	-12.8	8	9	5	21.8	15.4	-6.4	17	2	3	6.7	10.4	3.7
New Britain	9	5	8	15.4	20.4	5.0	15	4	3	13.1	10.4	-2.7	13	1	5	1.0	15.4	14.4
New Haven	--	--	--	--	--	--	--	--	--	--	--	--	3	1	5	1.0	15.4	14.4
Norwalk	2	5	4	15.4	13.1	-2.3	2	3	10	10.4	23.0	12.6	1	7	4	18.9	13.1	-5.8
Stamford	8	4	20	13.1	32.3	19.2	15	3	12	10.4	25.3	14.9	5	5	6	15.4	17.3	1.9
Waterbury	7	7	15	18.9	28.2	9.3	7	16	12	29.1	25.3	-3.8	4	2	3	6.7	10.4	3.7
Total*	35	7	10	18.9	23.0	4.1	47	5	7	16.0	18.8	2.8	45	2	4	6.9	14.2	7.3

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX DD

English Mathematics Pretest and Posttest Achievement Results for Group 3
Continuing Students in Grade 2-5 Cluster
1985-86

English Mathematics Achievement

District	N	Mean NPR		Mean NCE		NCE
		Pretest	Posttest	Pretest	Posttest	Change
Bridgeport	74	28	23	37.7	34.5	-3.2
Hartford	225	33	42	40.8	45.9	5.1
Naugatuck	10	24	19	35.0	31.2	-3.8
New Britain	115	16	24	29.4	35.1	5.7
New Haven	32	2	3	8.6	10.9	2.3
New London	26	10	15	22.7	28.5	5.7
Norwalk	17	18	33	30.5	40.5	9.9
Stamford	48	35	49	41.7	49.6	7.8
Windham	29	9	48	22.3	48.7	26.4
Total*	576	23	31	34.3	39.6	5.3

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX EE

English Mathematics Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 2-5
Grade by District Summary
1985-86

English Mathematics Achievement

	2nd grade						3rd grade						4th grade						5th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	--	--	--	--	--	--	29	32	16	40.1	29.1	-11.0	23	27	29	37.1	38.3	1.2	22	24	28	35.1	37.7	2.6
Hartford	5	57	72	53.7	62.3	8.6	36	44	55	46.8	52.6	5.8	84	35	37	41.9	43.0	1.1	100	27	41	37.1	45.2	8.1
Naugatuck	4	17	30	29.9	39.0	9.1	5	34	17	41.3	29.9	-11.4	1	11	2	24.2	6.7	-17.5	--	--	--	--	--	--
New Britain	48	18	36	30.7	42.4	11.7	25	12	17	25.3	29.9	4.6	23	22	21	33.7	33.0	-0.7	19	13	13	26.3	26.3	0.0
New Haven	--	--	--	--	--	--	10	12	1	25.3	1.0	-24.3	6	1	3	1.0	10.4	9.4	16	1	6	1.0	17.3	16.3
New London	10	23	18	34.4	30.7	-3.7	8	5	11	15.4	24.2	8.8	--	--	--	--	--	--	8	5	17	15.4	29.9	14.5
Norwalk	9	23	50	34.4	50.0	15.6	5	14	13	27.2	26.3	-0.9	1	3	13	10.4	26.3	15.9	2	19	32	31.5	40.1	8.6
Stamford	19	33	67	40.7	59.3	18.6	9	48	75	48.9	64.2	15.3	11	21	10	33.0	23.0	-10.0	9	45	44	47.4	46.8	-0.6
Windham	5	31	59	39.6	54.8	15.2	6	23	6	34.4	17.3	-17.1	10	2	97	6.7	89.6	82.9	8	9	6	21.8	17.3	-4.5
Total*	100	24	44	34.9	46.6	11.7	133	26	24	36.4	35.0	-1.5	159	24	33	35.3	40.9	5.5	184	19	29	31.4	38.1	6.6

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX FF

English Mathematics Pretest and Posttest Achievement Results for Group 3
Continuing Students in Grade 6-8 Cluster
1985-86

English Mathematics Achievement

District	N	Mean NPR		Mean NCE		NCE
		Pretest	Posttest	Pretest	Posttest	Change
Bridgeport	14	11	27	24.0	37.3	13.4
Hartford	228	30	28	39.1	37.7	-1.4
New Britain	26	6	7	17.6	19.6	1.9
Stamford	9	34	41	41.6	45.4	3.8
Waterbury	38	12	19	25.4	31.6	6.2
Windham	10	5	11	15.1	23.7	8.6
Total*	325	23	24	34.5	35.3	0.8

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX GG

English Mathematics Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 6 8 Grade by District Summary
1985-86

English Mathematics Achievement

	6th grade						7th grade						8th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	6	19	29	31.5	38.3	6.8	3	19	25	31.5	35.8	4.3	5	3	27	10.4	37.1	26.7
Hartford	82	33	43	40.7	46.3	5.6	90	35	25	41.9	35.8	-6.1	56	20	15	32.3	28.2	-4.1
New Britain	10	5	7	15.4	18.9	3.5	9	9	12	21.8	25.3	3.5	7	5	4	15.4	13.1	-2.3
Stamford	5	46	53	47.9	51.6	3.7	4	22	28	33.7	37.7	4.0	--	--	--	--	--	--
Waterbury	17	24	27	35.1	37.1	2.0	15	9	15	21.8	28.2	6.4	6	2	11	6.7	24.2	17.5
Windham	2	12	4	25.3	13.1	-12.2	6	3	13	10.4	26.3	15.9	2	7	13	18.9	26.3	7.4
Total*	122	28	35	37.4	42.1	4.6	127	25	22	36.1	33.8	-2.3	76	14	14	26.9	27.0	0.1

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX HH

English Mathematics Pretest and Posttest Achievement Results for Group 3
Continuing Students in Grade 9-11 Cluster
1985-86

English Mathematics Achievement

District	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	2	55	47	52.6	48.4	-4.2
Hartford	33	12	13	25.6	25.8	0.2
New Britain	45	12	25	25.6	35.7	10.1
New Haven	3	1	1	1.0	1.0	0.0
Stamford	26	27	29	37.4	38.5	1.1
Waterbury	15	12	13	24.9	26.6	1.7
Total*	124	15	20	27.8	31.9	4.1

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX II

English Mathematics Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 9-11
Grade by District Summary
1985-86

English Mathematics Achievement

	9th grade						10th grade						11th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	--	--	--	--	--	--	--	--	--	--	--	--	2	55	47	52.6	48.4	-4.2
Hartford	9	21	23	33.0	34.4	1.4	8	18	11	30.7	24.2	-6.5	16	7	9	18.9	21.8	2.9
New Britain	11	13	12	26.3	25.3	-1.0	18	13	30	26.3	39.0	12.7	16	11	30	24.2	39.0	14.8
New Haven	--	--	--	--	--	--	--	--	--	--	--	--	3	1	1	1.0	1.0	0.0
Stamford	8	36	33	42.4	40.7	-1.7	14	22	27	33.7	37.1	3.4	4	32	30	40.1	39.0	-1.1
Waterbury	7	13	13	26.3	26.3	0.0	6	8	15	20.4	28.2	7.8	2	22	10	33.7	23.0	-10.7
Total*	35	19	19	31.7	31.4	-0.3	46	15	23	28.5	34.4	5.9	43	11	17	23.9	29.6	5.8

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX JJ

English Language Arts Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grade 2-5 Cluster
1985-86

English Language Arts Achievement

District*	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	74	15	23	28.5	34.1	5.6
Hartford	225	22	37	33.7	42.8	9.0
Naugatuck	6	13	5	26.1	14.8	-11.3
New Britain	113	20	22	32.6	34.0	1.4
New Haven	32	18	30	31.1	38.7	7.6
New London	26	5	5	14.7	14.9	0.2
Norwalk	17	8	11	20.8	23.9	3.0
Windham	21	5	9	16.3	21.5	5.2
Total**	514	18	25	30.4	36.1	5.7

*Stamford administers the Sequential Tests of Educational Progress (STEP) to assess English basic skills achievement. Since the STEP does not include a language arts subtest, Stamford compares pre-post writing samples, awarding a maximum of 20 points on the basis of meaning, story development, clarity, and spelling/grammar. Samples were collected for 2 students in Grade 3, 12 in Grade 4, and 7 in Grade 5. Mean scores improved by 4.0, 2.8, and 0.7 points, respectively, between the pretest and posttest.

**Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX KK

English Language Arts Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 2-5
Grade by District Summary
1985-86

English Language Arts Achievement

	2nd grade						3rd grade						4th grade						5th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	--	--	--	--	--	--	29	23	18	34.4	30.7	-3.7	23	11	36	24.2	42.4	18.2	22	12	17	25.3	29.9	4.6
Hartford	5	68	64	59.9	57.6	-2.3	36	29	53	38.3	51.6	13.3	83	25	35	35.8	41.9	6.1	101	16	31	29.1	39.6	10.5
Naugatuck	--	--	--	--	--	--	5	8	4	20.4	13.1	-7.3	1	58	10	54.3	23.0	-31.3	--	--	--	--	--	--
New Britain	47	34	37	41.3	43.0	1.7	25	20	16	32.3	29.1	-3.2	24	9	13	21.8	26.3	4.5	17	11	14	24.2	27.2	3.0
New Haven	--	--	--	--	--	--	10	49	25	49.5	35.8	-13.7	6	7	31	18.9	39.6	20.7	16	11	32	24.2	40.1	15.9
New London	10	5	1	15.4	1.0	-14.4	8	4	10	13.1	23.0	9.9	--	--	--	--	--	--	8	5	11	15.4	24.2	8.8
Norwalk	9	10	24	23.0	35.1	12.1	5	5	2	15.4	6.7	-8.7	1	11	3	24.2	10.4	-13.8	2	10	10	23.0	23.0	0.0
Windham	4	3	14	10.4	27.2	16.8	7	10	8	23.0	20.4	-2.6	2	1	4	1.0	13.1	12.1	8	6	9	17.3	21.8	4.5
Total*	75	24	26	35.2	36.6	1.3	125	21	22	33.0	34.1	1.1	140	18	29	30.3	38.4	8.1	174	13	25	26.4	35.5	9.0

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX LL

English Language Arts Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grade 6-8 Cluster
1985-86

English Language Arts Achievement

District*	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	14	15	14	28.1	26.9	-1.2
Hartford	227	20	19	32.1	31.8	-0.3
New Britain	26	3	2	8.7	6.8	-1.9
New Haven	11	4	27	12.2	37.3	25.1
New London	2	2	4	6.7	13.1	6.4
Waterbury	36	5	11	15.2	24.4	9.3
Windham	9	3	9	11.0	22.4	11.4
Total**	325	14	15	26.8	28.6	1.8

*Stamford administers the Sequential Tests of Educational Progress (STEP) to assess English basic skills achievement. Since the STEP does not include a language arts subtest, Stamford compares pre-post writing samples, awarding a maximumum of 20 points on the basis of meaning, story development, clarity, and spelling/grammar. Pre-post samples were collected for five 6th graders, who gained 0.4 points, and for eight 8th graders, who gained 1.0 point. Only posttest samples were collected for four 7th graders, so gains could not be evaluated.

**Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX MM

English Language Arts Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 6 8
Grade by District Summary
1985-86

English Language Arts Achievement

	6th grade						7th grade						8th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	6	17	9	29.9	21.8	-8.1	3	7	18	18.9	30.7	11.8	5	19	18	31.5	30.7	-0.8
Hartford	81	24	29	35.1	38.3	3.2	90	23	18	34.4	30.7	-3.7	56	11	11	24.2	24.2	0.0
New Britain	10	5	3	15.4	10.4	-5.0	10	2	2	6.7	6.7	0.0	6	1	1	1.0	1.0	0.0
New Haven	2	9	26	21.8	36.4	14.6	6	1	30	1.0	39.0	38.0	3	15	23	28.2	34.4	6.2
New London	2	2	4	6.7	13.1	6.4	--	--	--	--	--	--	--	--	--	--	--	--
Waterbury	16	3	13	10.4	26.3	15.9	14	11	12	24.2	25.3	1.1	6	2	6	6.7	17.3	10.6
Windham	2	6	15	17.3	28.2	10.9	5	2	7	6.7	18.9	12.2	2	5	12	15.4	25.3	9.9
Total*	119	16	21	28.9	32.9	4.0	128	15	15	28.1	28.2	0.1	78	9	10	21.5	22.7	1.3

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX NN

English Language Arts Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grade 9-11 Cluster
1985-86

English Language Arts Achievement

District*	N	Mean NPR		Mean NCE		NCE Change
		Pretest	Posttest	Pretest	Posttest	
Bridgeport	2	23	32	34.4	40.1	5.7
Hartford	34	11	7	23.8	19.1	-4.8
New Britain	36	2	2	4.8	6.6	1.8
Norwalk	3	4	5	13.1	14.6	1.5
Waterbury	18	7	10	19.1	23.5	4.4
Total**	93	5	5	15.4	15.4	0.0

*Stamford administers the Sequential Tests of Educational Progress (STEP) to assess English basic skills achievement. Since the STEP does not include a language arts subtest, Stamford compares pre-post writing samples, awarding a maximum of 20 points on the basis of meaning, development, clarity, and spelling/grammar. Only posttest samples were submitted for 45 students in Grades 9-12, so gains could not be evaluated.

**Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX OO

English Language Arts Pretest and Posttest Achievement Results for Group 3 Continuing Students in Grades 9-11
Grade by District Summary
1985-86

English Language Arts Achievement

	9th grade						10th grade						11th grade					
		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE		Mean NPR		Mean NCE		NCE
District	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change	N	Pre	Post	Pre	Post	Change
Bridgeport	--	--	--	--	--	--	--	--	--	--	--	--	2	23	32	34.4	40.1	5.7
Hartford	9	18	16	30.7	29.1	-1.6	8	17	8	29.9	20.4	-9.5	17	6	4	17.3	13.1	-4.2
New Britain	10	2	1	6.7	1.0	-5.7	14	2	3	6.7	10.4	3.7	12	1	2	1.0	6.7	5.7
Norwalk	1	19	10	31.5	23.0	-8.5	1	2	3	6.7	10.4	3.7	1	1	3	1.0	10.4	9.4
Waterbury	7	7	13	18.9	26.3	7.4	7	13	15	26.3	28.2	1.9	4	2	3	6.7	10.4	3.7
Total*	27	7	6	18.8	17.7	-1.0	30	6	6	17.5	17.2	-0.2	36	3	4	11.2	12.1	0.9

*Total summarizes the data for only the districts shown and should not be considered a statewide average.

APPENDIX PP

Results of Posttest Language Proficiency Tests for Group 2A
Exiting Students - Increased English Proficiency
1985-86

Language Proficiency Results

District	Grades K-2 N	Grades K-2 Mean NPR	Grades 3-5 N	Grades 3-5 Mean NPR	Grades 6-8 N	Grades 6-8 Mean NPR	Grades 9-11 N	Grades 9-11 Mean NPR
Bridgeport	68	46	129	22	36	10	23	8
Danbury					2	5	16	5
Hartford*					76	36	67	23
Meriden	11	57	26	27	3	42	3	17
Naugatuck	4	57	2	71				
New Britain	32	65	17	47	5	54	4	42
New Haven	27	77	32	44	12	34	8	18
New London	6	58	12	56	4	42		
Norwalk	15	64	5	58			3	59
Stamford			11	64	9	33	8	11
Waterbury	8	62	17	38	16	43	7	35
Windham			10	37	3	42		
Total	171	59	261	32	166	30	139	17

*Hartford used the Language Assessment Scales (LAS) for Grades K-6, which does not offer national percentile ranks (NPRs). Instead, raw scores are converted to five levels of language proficiency. Students in Grades K-2 and 4-6 who exited from the bilingual education program attained mean raw scores between 88 and 100, which qualified them as Totally Fluent in English; those in Grade 3 who exited the program attained a mean raw score of 83, which qualified them as Near Fluent in English.

APPENDIX QQ

Results of Posttest Language Proficiency Tests for Group 2A Exiting Students Increased English Proficiency
Grade by District Summary
1985-86

Language Proficiency Results

	Grade																					
	K		1		2		3		4		5		6		7		8		9		10		11	
District	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR
Bridgeport	9	36	17	72	42	38	51	44	42	9	36	16	16	14	9	8	11	8	5	5	5	10	13	8
Danbury															1	3	1	9			8	7	8	4
Hartford*															21	49	55	32	24	27	22	19	21	22
Meriden					11	57	20	26	2	33	4	29	1	39	1	37	1	50	1	18	2	17		
Naugatuck					4	57	1	73			1	68												
New Britain	4	73	4	78	24	61	7	59	5	52	5	26	1	64	1	65	3	46	1	22	1	62	2	43
New Haven			2	81	25	77	9	43	17	45	6	42	5	42	4	37	3	18	1	23	3	19	4	16
New London			1	61	5	57	4	62	7	55	1	42	4	42										
Norwalk					15	64	1	58	3	58	1	57							1	53			2	62
Stamford							9	63	2	69			3	38			6	30			1	12	1	11
Waterbury			4	67	4	57	7	37	6	40	4	37	5	42	5	54	6	35	1	35	4	30	2	47
Windham							7	28	2	74	1	26	2	49	1	29								
Total	13	48	28	73	130	57	116	42	86	25	59	23	37	28	43	35	86	28	34	23	46	16	59	15

*Hartford used the Language Assessment Scales (LAS) for Grades K-6, which does not offer national percentile ranks (NPRs). Instead, raw scores are converted to five levels of language proficiency. Students in Grades K-2 and 4-6 who exited from the bilingual education program attained mean raw scores between 88 and 100, which qualified them as Totally Fluent in English; those in Grade 3 who exited the program attained a mean raw score of 83, which qualified them as Near Fluent in English.

APPENDIX RR

English Reading Posttest Achievement Results for Group 2A
Exiting Students - Increased English Proficiency
1985-86

District	Grades 2-5 N	Grades 2-5 Mean NPR	Grades 6-8 N	Grades 6-8 Mean NPR	Grades 9-11 N	Grades 9-11 Mean NPR
Bridgeport	166	25	35	19	17	8
Danbury			2	23	15	3
Hartford	85	40	112	28	63	6
Meriden	37	35	3	17	3	31
Naugatuck	6	22				
New Britain	40	32	5	9	4	54
New Haven	43	28	12	25	5	17
New London	18	21	4	19		
Norwalk	18	32			3	16
Stamford	11	40	8	21	7	17
Waterbury	16	41	11	33	6	30
Windham	12	19	3	10		
Total	452	30	195	25	123	9

APPENDIX SS

English Reading Posttest Achievement Results for Group 2A Exiting Students - Increased English Proficiency
Grade by District Summary
1985-86

	Grade																					
	2		3		4		5		6		7		8		9		10		11	
District	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR
Bridgeport	35	34	49	31	42	20	40	18	17	26	8	18	10	10	7	13			10	6
Danbury											1	25	1	22			1	2	8	4
Hartford	4	81	17	41	39	36	25	38	36	40	21	34	55	20	20	6	22	6	21	1
Meriden	11	48	20	32	2	25	4	20	1	18	1	22	1	13	1	39	2	27		
Naugatuck	4	25	1	22			1	12												
New Britain	23	42	7	35	5	18	5	8	1	6	1	18	3	8	1	38	1	50	2	63
New Haven	18	33	6	27	14	26	5	18	5	18	4	28	3	35	1	58	2	10	2	11
New London	6	21	4	30	7	19	1	9	4	19										
Norwalk	15	32	1	28	2	35									1	22			2	13
Stamford			9	39	2	42			3	30			5	17			1	17	6	17
Waterbury	3	44	5	55	4	33	4	29	4	35	2	25	5	36	1	39	4	31	1	21
Windham	1	49	7	17	3	18	1	17	2	7	1	18								
Total	116	36	109	32	81	22	61	17	73	31	39	28	83	19	32	10	39	8	52	9

APPENDIX TT

English Mathematics Posttest Achievement Results for Group 2A
Exiting Students - Increased English Proficiency
1985-86

District	Grades 2-5 N	Grades 2-5 Mean NPR	Grades 6-8 N	Grades 6-8 Mean NPR	Grades 9-11 N	Grades 9-11 Mean NPR
Bridgeport	166	41	35	31	17	23
Danbury			2	29	15	11
Hartford	84	52	112	41	62	22
Meriden	37	32	3	41	3	39
Naugatuck	6	39				
New Britain	40	36	5	11	4	71
New Haven	43	32	12	16	5	15
New London	11	41				
Norwalk	18	47				
Stamford	11	74	8	36	7	30
Waterbury	16	52				
Windham	12	17	3	16		
Total	444	42	180	35	113	22

APPENDIX UU

English Mathematics Posttest Achievement Results for Group 2A Exiting Students - Increased English Proficiency
Grade by District Summary
1985-86

	Grade																					
	2		3		4		5		6		7		8		9		10		11			
District	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR		
Bridgeport	35	49	49	51	42	25	40	40	17	40	8	32	10	18	7	22			10	24		
Danbury											1	21	1	38			7	12	8	11		
Hartford	4	81	17	60	39	44	24	55	36	61	21	44	55	28	20	22	22	21	20	23		
Meriden	11	18	20	39	2	41	4	39	1	41	1	34	1	49	1	36	2	40				
Naugatuck	4	44	1	30			1	32														
New Britain	23	44	7	38	5	26	5	13	1	2	1	22	3	14	1	44	1	83	2	76		
New Haven	18	54	6	11	14	29	5	10	5	11	4	10	3	44	1	95	2	8	2	2		
New London	6	49	4	42			1	8														
Norwalk	15	53	1	29	2	15																
Stamford			9	79	2	49			3	56			5	26			1	33	6	30		
Waterbury	3	86	5	46	4	41	4	40														
Windham	1	74	7	9	3	12	1	75	2	13	1	23										
Total	120	48	126	46	113	32	85	40	65	47	37	34	78	27	30	26	35	21	48	22		

APPENDIX VV

English Language Arts Posttest Achievement Results for Group 2A
Exiting Students - Increased English Proficiency
1985-86

District	Grades 2-5 N	Grades 2-5 Mean NPR	Grades 6-8 N	Grades 6-8 Mean NPR	Grades 9-11 N	Grades 9-11 Mean NPR
Bridgeport	166	37	35	27	17	21
Danbury			2	18	15	6
Hartford	85	43	112	32	62	13
Meriden	37	51	3	25	3	37
Naugatuck	6	9				
New Britain	40	35	4	11	4	27
New Haven	43	30	12	45		
New London	18	25	4	24		
Norwalk	18	35			1	31
Waterbury	16	43	10	38	6	15
Windham	12	33	3	19		
Total	441	37	185	31	108	14

APPENDIX WW

English Language Arts Posttest Achievement Results for Group 2A Exiting Students - Increased English Proficiency
Grade by District Summary
1985-86

	Grade																					
	2		3		4		5		6		7		8		9		10		11	
District	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR	N	Mean NPR
Bridgeport	35	35	49	47	42	29	40	35	17	28	8	28	10	24	7	27			10	17
Danbury											1	19	1	17			7	13	8	3
Hartford	4	62	17	46	39	37	25	47	36	48	21	33	55	23	20	25	22	8	20	10
Meriden	11	68	20	48	2	16	4	34	1	32	1	16	1	28	1	20	2	47		
Naugatuck	4	9	1	9			1	8												
New Britain	23	48	7	29	5	14	5	15	1	19			3	9	1	28	1	4	2	48
New Haven	18	17	6	38	14	47	5	33	5	41	4	46	3	52						
New London	6	15	4	59	7	22	1	5	4	24										
Norwalk	15	37	1	15	2	32									1	31				
Waterbury	3	58	5	50	4	42	4	25	4	39	1	41	5	37	1	5	4	22	1	8
Windham	1	44	7	31	3	29	1	56	2	22	1	13								
Total	120	36	117	44	118	32	86	36	70	39	37	32	78	24	31	25	36	11	41	10

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